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Report No: PAD2763

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED SCALE-UP FACILITY CREDIT

IN THE AMOUNT OF EURO 107.5 MILLION
(US$130 MILLION EQUIVALENT)

TO THE

REPUBLIC OF SENEGAL

FOR THE

RURAL WATER SUPPLY AND SANITATION PROJECT

May 31, 2018

Water Global Practice
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective April 30, 2018)

Currency Unit	=	CFA Franc (CFAF)
CFAF 542	=	US$1
EUR 0.8267	=	US$1

FISCAL YEAR
January 1 - December 31

Regional Vice President:	Makhtar Diop
Country Director:	Louise J. Cord
Senior Global Practice Director:	Guang Zhe Chen
Practice Manager:	Steven N. Schonberger
Task Team Leaders:	Oumar Diallo

ABBREVIATIONS AND ACRONYMS

CBA	Cost-Benefit Analysis
CCS	Steering Committee (*Comité de Coordination et de Suivi*)
CE	Cost-Effectiveness
CESMP	Contractor Environmental and Social Management Plan
CPF	Country Partnership Framework
DA	Directorate of Sanitation (*Direction de l'Assainissement*)
DEEC	Directorate of Environment (*Direction de l'Environnement et des Établissements Classés*)
DGPRE	Directorate of Water Resources Management and Planning (*Direction de la Gestion et de la Planification des Ressources en Eau*)
DH	Directorate of Hydraulics (*Direction de l'Hydraulique*)
DI	Directorate of Investment (*Direction de l'Investissement*)
EIRR	Economic Internal Rate of Return
ESIA	Environmental and Social Impact Assessment
ESHSAP	Environmental, Social, Health, and Safety Action Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FIRR	Financial Internal Rate of Return
FM	Financial Management
GBV	Gender-based Violence
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoS	Government of Senegal
GPN	General Procurement Notice
GRM	Grievance Review Mechanism
IDA	International Development Association
IEA	Initial Environmental Analysis
IEC	Information, Education and Communication
IFR	Interim Financial Report
IWRM	Integrated Water Resources Management
LTWSP	Long-Term Water Sector Project
M&E	Monitoring and Evaluation
MDG	Millennium Development Goal
MEFP	Ministry of Economy, Finance and Planning (*Ministère de l'Économie, des Finances et du Plan*)
MHA	Ministry of Water and Sanitation (*Ministère de l'Hydraulique et de l'Assainissement*)
N/A	Not Applicable
NDP/GL	Notto-Diosmone-Palmarin/Gorom-Lampsar
NPV	Net Present Value
NRW	Nonrevenue Water
O&M	Operations and Maintenance

OFOR	Rural Boreholes Agency (*Office des Forages Ruraux*)
ONAS	National Sanitation Agency of Senegal (*Office National de l'Assainissement du Sénégal*)
OT	Office Technology
PAGIRE	Integrated Water Resources Management Action Plan (*Plan d'Action pour la Gestion Intégrée des Ressources en Eau*)
PAP	Project-Affected Person
PCU	PEPAM Project Coordination Unit
PDO	Project Development Objective
PEPAM	Water and Sanitation Millennium Program (*Programme d'Eau Potable et d'Assainissement du Millénaire*)
PFL	Pour-flush Latrine
PIM	Project Implementation Manual
P_p	OFOR Fee (*Prix Patrimoine)*
PPP	Public-private Partnership
PPSD	Project Procurement Strategy for Development
PSE	Emerging Senegal Plan (*Plan Sénégal Emergent*)
PSP	Private Sector Participation
RAP	Resettlement Action Plan
RNU	Unique National Registry (*Registre National Unique)*
RPF	Resettlement Policy Framework
RWS	Rural Water Supply
SDAGE	Water Resources Development Master Plan (*Schéma Directeur d'Aménagement et de Gestion des Ressources en Eau*)
SDE	Senegal Water Utility (*Sénégalaise des Eaux*)
SDG	Sustainable Development Goal
SIA	Specialized Implementation Agency
SNAR	National Rural Sanitation Strategy (*Stratégie Nationale d'Assainissement Rural*)
SOE	Statement of Expenditures
SONES	National Water Company of Senegal (*Société Nationale des Eaux du Sénégal*)
SPC	Shadow Price of Carbon
SPN	Special Procurement Notice
STP	Sludge Treatment Plant
SUF	Scale-up Facility
SYSCOHADA	Accounting System of the Organization for the Harmonization of Business Law in Africa
UNDB	United Nations Development Business
UWSP	Urban Water and Sanitation Project
WHO	Word Health Organization
WRM	Water Resources Management
WSP	Water and Sanitation Program
WSS	Water Supply and Sanitation
WWTP	Waste Water Treatment Plant

BASIC INFORMATION

Country(ies)	Project Name	
Senegal	Senegal Rural Water Supply and Sanitation Project	
Project ID	**Financing Instrument**	**Environmental Assessment Category**
P164262	Investment Project Financing	B-Partial Assessment

Financing & Implementation Modalities

[ ] Multiphase Programmatic Approach (MPA)	[ ] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[ ] Fragile State(s)
[ ] Disbursement-linked Indicators (DLIs)	[ ] Small State(s)
[ ] Financial Intermediaries (FI)	[ ] Fragile within a non-fragile Country
[ ] Project-Based Guarantee	[ ] Conflict
[ ] Deferred Drawdown	[ ] Responding to Natural or Man-made Disaster
[ ] Alternate Procurement Arrangements (APA)	

Expected Approval Date	Expected Closing Date
21-Jun-2018	30-Jun-2023

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The project's development objective is to increase access to improved water and sanitation services in selected rural areas and strengthen capacity for water resources management.

Components

Component Name	Cost (US$, millions)
Component 1 : Rural Water Supply	40.88

Component 2: Sanitation	69.13
Component 3: Water Resources Management	7.33
Component 4: Program coordination, Institutional support and Capacity building	12.66

Organizations

Borrower:	REPUBLIQUE DU SENEGAL Ministère de l'Hydraulique et de l'Assainissement (MHA)
Implementing Agency:	Direction de l'Hydraulique (DH) Office des Forages Ruraux (OFOR) Direction de Gestion et de Planification des Ressources en Eau (DGPRE) Project Implementation Unit (PIU) Office National de l'Assainissement du Sénégal (ONAS) Direction de l'Assainissement (DA)

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	130.00
Total Financing	130.00
of which IBRD/IDA	130.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	130.00
IDA Credit	130.00

IDA Resources (in US$, Millions)

	Credit Amount	Grant Amount	Total Amount
Scale-up Facility (SUF)	130.00	0.00	130.00
Total	**130.00**	**0.00**	**130.00**

Expected Disbursements (in US$, Millions)

WB Fiscal Year	2018	2019	2020	2021	2022	2023
Annual	0.00	7.00	25.00	35.00	35.00	28.00
Cumulative	0.00	7.00	32.00	67.00	102.00	130.00

INSTITUTIONAL DATA

Practice Area (Lead)

Water

Contributing Practice Areas

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?	
a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF	Yes
b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment	Yes
c. Include Indicators in results framework to monitor outcomes from actions identified in (b)	Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	Low
2. Macroeconomic	Low
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Substantial

6. Fiduciary	Moderate
7. Environment and Social	Moderate
8. Stakeholders	Moderate
9. Other	
10. Overall	Moderate

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	✓	
Performance Standards for Private Sector Activities OP/BP 4.03		✓
Natural Habitats OP/BP 4.04		✓
Forests OP/BP 4.36		✓
Pest Management OP 4.09		✓
Physical Cultural Resources OP/BP 4.11	✓	
Indigenous Peoples OP/BP 4.10		✓
Involuntary Resettlement OP/BP 4.12	✓	
Safety of Dams OP/BP 4.37		✓
Projects on International Waterways OP/BP 7.50		✓
Projects in Disputed Areas OP/BP 7.60		✓

Legal Covenants

Sections and Description

Schedule 2.I.A.3 In order to ensure proper implementation of the Project, the following entities each under their

respective mandates shall assist the PCU in the carrying out Project activities: (i) OFOR for the water supply, (ii) ONAS for the sanitation and (iii) DGPRE for the water resources management ("Specialized Implementation Agencies" or "SIAs"). The Recipient shall ensure that each SIA maintains, throughout Project implementation, (i) staffing, including by the recruitment of a social safeguards specialist for OFOR and ONAS no later than six (6) months after the Effective Date and (ii) resources satisfactory to the Association, as further described in the Project Implementation Manual.
The SIAs shall be responsible for (i) assisting the PCU with the quality control of procurement documents; (ii) the technical management of activities, including the provision of quality control for infrastructural work and ensuring that appropriate safeguards requirement and standards are maintained; (iii) the review of contractors' payment requests for approval by the PCU.

Sections and Description

Schedule 2.I.B Matching Grants

1. For the purposes of carrying out Part 2.4 of the Project, the Recipient shall make available part of the proceeds of the Credit through a matching grants mechanism to Developers responsible for building latrines in selected areas ("Matching Grants").

2. The Recipient shall ensure that the Matching Grants shall be made available only upon the Recipient's determination, on the basis of an appraisal conducted in accordance with the criteria, guidelines and detailed procedures set forth in the Project Implementation Manual, inter alia: (i) appraised on the basis of an environmental and social assessment and other guidelines acceptable to the Association (and be accompanied by appropriate Safeguard Documents, if required); (ii) approved by the Recipient and the Association, unless with respect to the Recipient's approval, the Association has notified the Recipient in writing that its prior approval is not required; and
(iii) included in the Annual Work Plan and Budget approved by the Association in accordance with Section F of this Schedule.

Sections and Description

Schedule 2.IV In order to monitor the implementation of Part 4.2 of the Project, the Recipient shall ensure ONAS and OFOR have their financial statements audited. Each audit of the financial statements shall cover the period of one fiscal year of the Recipient, commencing with the fiscal year in which the first withdrawal is made. The audited financial statements for each such period shall be furnished to the Association not later than six (6) months after the end of such period.

Sections and Description

Schedule 2.I.C.1 No later than one month after the Effective Date, the Recipient shall: (a) prepare under terms of reference acceptable to the Association, and furnish to the Recipient and the Association, an implementation manual for the Project containing detailed arrangements and procedures for: (i) institutional coordination and day-to-day execution of the Project; (ii) Project budgeting, disbursement and financial management; (iii) procurement; (iv) monitoring, evaluation, reporting and communication; (v) safeguards monitoring and mitigation; (vi) the

responsibilities and mandate of each SIA; (vii) the selection criteria of the Developers, the financial management, procurement and disbursement procedures of the Matching Grants and (viii) such other arrangements and procedures as shall be required for the Project; (b) affords the Recipient and the Association a reasonable opportunity to exchange views with the Project Implementing Entity; and (c) thereafter adopts such Project implementation manual as shall have been approved by the Association ("Project Implementation Manual").

Conditions

Type	Description
Disbursement	Notwithstanding the provisions of Part A above, no withdrawal shall be made: (a) from the Financing Account until the Association has received payment in full of the Front-end Fee (b) for payments made prior to the Signature Date; or (c) under Category 2, unless the Association is satisfied that the Matching Grants comply with the provisions of Section 1.B of Schedule 2 of the Agreement

SENEGAL
SENEGAL RURAL WATER SUPPLY AND SANITATION PROJECT

TABLE OF CONTENTS

I. STRATEGIC CONTEXT

A. Country Context

1. **Senegal is a Sub-Saharan African country with a population of 14.8 million (2016), of which 54 percent live in rural areas**. The annual growth rate of the population until 2030 is estimated at 3.0 percent, with a lower growth rate of 2.6 percent in rural areas[1]. Senegal's per capita gross national income using the Atlas method was US$950 in 2016.

2. **After decades of modest growth, particularly from 2007 to 2013, in 2014 the Government of Senegal (GoS) adopted the Emerging Senegal Plan (*Plan Senegal Emergent*, PSE) designed to help the country out of a cycle of low-growth and weak poverty reduction**. Greater competitiveness, timely progress in terms of structural reforms, and a favorable external environment all mean that Senegal's economic growth has recently accelerated, reaching about 6.5 percent in 2015; and 6.6 percent in 2016, making Senegal one of the best performing economies in Sub-Saharan Africa. The recent higher growth can mainly be attributed to larger contributions from the agricultural and industrial sectors, reflecting stronger international competitiveness, initial structural changes and, to a lesser extent, favorable exogenous factors, such as positive terms of trade and weather conditions. Other macroeconomic indicators are also showing positive trends, although public debt is similarly trending upwards. The fiscal deficit has narrowed in the last few years, to 4.8 percent of gross domestic product (GDP) in 2015, and 4.2 percent in 2016.

3. **Senegal's medium-term economic prospects are positive, providing that recent reforms are sustained and deepened, and that the external environment remains supportive**. Economic growth is projected to reach 6.8 percent in 2017 and 6.9 percent in 2018, and the PSE economic blueprint for becoming a middle-income country has targeted even more ambitious growth rates between 7.6 percent and 8.3 percent from 2016 to 2018. However, to accelerate economic growth, Senegal will need all drivers of growth to align. This means further reforms aimed at solving critical bottlenecks in the country's productivity and competitiveness; sustaining a credible fiscal policy and avoiding currency overvaluation; as well as a positive international environment.

4. **Progress in poverty reduction in Senegal has been mixed in the last 15 years**. The poverty rate dropped 7 percentage points between 2000 and 2005, particularly in urban areas, followed by stagnation until 2011, when poverty was estimated at 47 percent. Although there is a lack of updated data, recent projections indicate that progress in poverty reduction has been rather modest, and that Senegal continues to display high rates of monetary poverty. Simulations based on the evolution of per capita GDP suggest that poverty may have decreased by 3 to 6 percent from 2011 to 2015, driven by improvements in rural areas and agricultural expansion. Data on employment suggest that some reallocation out of agriculture took place in rural areas, which might have further contributed to poverty reduction. However, the non-monetary evidence suggests that the reduction of income inequality has stagnated. Social indicators and outcomes have been generally positive, although slow and uneven. In urban areas, the poor are mainly unemployed or working in the informal sector, typically in trade. Poverty in urban areas is shallower, and urban poor are more likely to be able to

[1] Source: National Agency of Statistics and Demography – *Projection de la population du Sénégal* (August 2015).

transit out of poverty. Most of the poor live in rural areas, where poverty is deeper and more severe, generally linked to the lack of access to basic needs like food and social services (education, health, electricity, water and sanitation).

B. Sectoral and Institutional Context

Situation of water and sanitation services and challenges

5. **Senegal is a Sahelian country with limited water resources for supporting key sectors of the economy including agriculture as well as industrial and domestic water supply**. Therefore, improving knowledge of and strengthening the integrated planning, development and management of surface and ground water resources is essential. Consequently, the GoS has adopted a National Program for Integrated Water Resources Management (IWRM) together with an action plan that includes the protection of water resources in order to ensure an adequate quantity and quality of water to meet the demands of the various users. The IWRM Action Plan (*Plan d'action pour la gestion intégrée des ressources en eau*, Integrated Water Resources Management Action Plan - PAGIRE) adopted in 2007, is aligned with the recommendations of the Rio Summit and the vision of the Council of African Ministers of Water concerning the sustainable management of water resources. The implementation process of the PAGIRE is based on: (i) improving governance through the legislative and regulatory framework; (ii) improving knowledge and monitoring of water resources; (iii) strengthening the water resources planning systems; and (iv) communication and information on water resources issues. The implementation of the PAGIRE places IWRM at the heart of the sector's governance policies and strategies, in line with the national Sustainable Development Goals (SDG) agenda, which devotes four indicators to IWRM.

6. **Substantial progress with regard to the legislative framework has been achieved with the preparation of the Water Act (*Code de l'Eau*),** which should soon be submitted to the National Assembly. However, there is a need to strengthen the data collection and analysis capabilities to ensure that decision-making is based on scientific analysis to inform investments and water resources related policies. This will be key in ensuring water security and the sustainability of urban and rural water supplies, as well as sanitation infrastructure.

7. **Senegal's urban water sub-sector ranks among the top performers in Sub-Saharan Africa.** Through successful reforms underpinned by large investment programs and an aggressive policy to promote subsidized household water connections, near-universal access to piped water has been achieved in urban areas (98.5 percent, with 90 percent served through private connections). This exceeds the initial target of 96 percent set as part of the Millennium Development Goals (MDGs).

8. **Steady investment programs in the rural water supply (RWS) sub-sector have resulted in an access rate to safe drinking water in rural areas of 88 percent in 2015, exceeding the initial target of 82 percent set out in the MDGs**. However, the development of the RWS sub-sector is still facing the following challenges:
   (a) Many rural water systems are obsolete and need to be upgraded/rehabilitated by: (i) the reinforcement of water production/storage facilities; (ii) the replacement of pumping systems; the densification of water distribution networks; and (iii) the implementation of household

water connections programs in response to growing demand.

(b) More than one million people are affected by the poor quality of the groundwater in the central zones of Senegal. The high levels of salt and fluorine exceed the limits set by of the World Health Organization (WHO) with a negative impact on public health. In addition, most of the groundwater delivered by the existing piped systems is not disinfected.

(c) The need to further support the ongoing reforms designed to introduce private sector participation (PSP) in the management of rural water facilities, and to enable the Rural Boreholes Agency (*Office des Forages Ruraux*, OFOR), as the asset-holding company (*société de patrimoine*) of the sub-sector, to effectively fulfill its mission, of managing assets and monitoring the delivery of services by private operators.

9. **The sanitation sub-sector did not witness similar progress, and did not achieve the MDG targets**. Only 48 percent of the population has access to improved sanitation services, and there is a large disparity between urban and rural areas. Urban areas have achieved a 62 percent access rate, while it is only 36 percent in rural areas. This disparity is even more significant in the central areas of the country where only 26 percent of the rural population has access to improved sanitation, and 53 percent practice open defecation with a negative impact on public health and child mortality. Mobilizing additional concessional financing to fill the gap in rural areas particularly in the central part of the country, is the main challenge facing the development of the sub-sector. Massive intervention is needed in this area to complement the GoS' efforts to achieve its SDG in rural sanitation. Sanitation-related hygiene promotion activities are also required in order to increase the impact on behavioral change and public health and generate more counterpart funding for sanitation facilities from beneficiaries.

10. **In addition, small towns in rural areas face specific sanitation challenges**. Most households possess latrines and water service connections. However, the disposal of fecal sludge and wastewater is largely inadequate and environmentally unsafe. Manual emptying of latrines is the most frequent desludging method and, in the absence of adequate disposal sites, the few operators of vacuum trucks dump fecal sludge near the towns. Wastewater disposal faces similar issues, as only a limited number of households have soak away pits of acceptable quality, and their proper functioning may be prevented by soil and infiltration conditions. The dumping of wastewater in the streets is prevalent. The sanitation master plans that were carried out for the small towns show that these challenges can only be addressed by a combination of on-site and off-site solutions (condominial sewerage/conventional sewerage), associated with wastewater and sludge treatment plants (STP).

11. **To boost access to improved sanitation and to reduce the rate of open defecation in rural areas, a new strategy for rural sanitation was adopted in 2013 and its action plan was validated by the GoS in 2016**. The main goal of the National Rural Sanitation Strategy (*Stratégie Nationale de l'Assainissement Rural*, SNAR) is to gradually hand over responsibility for building sanitation facilities to the households by relying on sanitation marketing techniques. It was noted that each time the GoS helps to build one sanitation facility, other households self-build 1.5 facilities, which indicates that there is a significant capacity for self-building. The new strategy thus plans to support households in carrying out their own sanitation efforts through the implementation of a marketing approach to sanitation. Under this approach, the GoS should plan to strengthen the capacities of the private sector (craftsmen, masons, etc.), carry out promotion and information, education and

communication (IEC) campaigns, and regulate and manage subsidies. The latter remain necessary, first of all for reasons of equity between urban and rural areas, and also to provide incentives for private sector involvement. The governing rules and procedures of this approach have been elaborated by the Directorate of Sanitation (*Direction de l'assainissement*, DA) of the Ministry of Water and Sanitation (*Ministère de l'Hydraulique et de l'Assainissement*, MHA), with the support of the Water and Sanitation Program (WSP), but it remains to be tested.

Institutional and Legal Setting

12. **The provision of water supply and sanitation (WSS) services in Senegal is governed by a comprehensive legal and contractual framework**. The Water and Sanitation Law of September 24, 2008[2], defines the responsibilities for managing urban and rural WSS services as well as the principles for delivering them by delegating responsibilities (including to private entities), for monitoring and controlling the delivery of services and for the cost recovery of services.

13. **Since 1996, with IDA support, Senegal has been engaged, in a reform of the WSS sector, the principles and progress of which are summarized in Box 1**.

Box 1. Basic Features and Progress of WSS Reform in Senegal

The WSS sector reform in Senegal is based on three overarching principles: (i) vesting public entities with the responsibility for planning and implementing the development of services; (ii) vesting private operators with the responsibility for delivering services; and (iii) setting targets for and monitoring performance of the various actors supported by financial incentives. These principles were progressively applied in the urban and rural areas to the WSS sub-sectors.

The first phase of reform took place in 1996 with: (i) the creation of the National Water Company of Senegal (SONES), a public holding company in charge of managing assets and developing urban water services under a concession agreement with the GoS; (ii) the recruitment of a private operator, the SDE, which delivers water services under a performance-based lease agreement (*affermage*); and (iii) the establishment of the National Sanitation Agency of Senegal (*Office National de l'Assainissement du Sénégal*, ONAS), a parastatal in charge of managing urban sanitation. SONES and ONAS have entered into performance contracts with the GoS, which is represented by the MHA and the MEFP. The implementation of the first phase of reform was supported by two IDA-financed operations.

The urban water supply reform was replicated in 2014 in the rural water supply sub-sector, with the creation of OFOR, which plays a similar role in rural areas to the one assigned to SONES in urban areas - managing assets, developing rural water services, and monitoring private operators –, and the delegation of the operational management of rural water systems to private operators. The Water and Sanitation Millennium Project (*Programme d'Eau Potable et d'Assainissement du Millénaire*, PEPAM-IDA, P109986) helped design and initiate this reform. As of today, four regional *affermage* contracts, out of the eight initially planned, have been signed and it is expected that all rural piped water systems in Senegal will be managed by private operators by the end of 2018.

With a second-generation reform of the urban water supply sub-sector, the GoS plans to give more responsibility to the private operator in terms of asset renewal and to launch a bidding process to recruit an operator for the *affermage* to seek savings in the operator's remuneration through competition. The process is on-going with the support of the Senegal Urban Water and Sanitation Project (UWSP, P150351) and is expected to be completed during 2018.

In parallel, ONAS moved to actively seek PSP in the operation and maintenance of urban sanitation facilities. As a first step, PSP is being carried out through service contracts covering the Dakar facilities (including sewers and sludge treatment plants). ONAS has prepared a roadmap to generalize PSP to all sewerage systems throughout the country.

[2] Water and Sanitation Act, organizing the public service for water supply and household wastewater (*Loi portant organisation du service public d'eau potable et d'assainissement des eaux usées domestiques, Loi SPEPA 2008*).

14. **The implementation of the rural WSS sub-sector reforms is facing several institutional challenges**:
    (a) OFOR has developed capacities in planning and implementing RWS investments, but is still deprived of adequate tools to manage the sub-sector's assets and effectively monitor the delivery of services by private operators and the execution of their contractual obligations.
    (b) ONAS has made substantial progress in delegating responsibilities to the private sector for maintaining the networks and operating the treatment facilities, but will need assistance at start-up in order to fulfill its new responsibilities in rural sanitation.
    (c) The recently approved SNAR emphasizes the need to involve the Senegalese private sector in developing access to improved sanitation by using a marketing approach as a medium-term alternative to subsidized latrines programs. This approach remains to be tested.

Rationale for World Bank Intervention

15. **For more than 20 years, the World Bank has been a leading partner of the GoS in the development of Senegal's water and sanitation services, through IDA lending and knowledge**. Under three successive operations funded by IDA over the period 1995-2015, namely the Water Sector Project (P002346, US$100 million, closed in June 2004), the Long-Term Water and Sanitation Project (LTWSP, P041528, US$125 million, closed in June 2009), the Water and Sanitation Millennium Program (*Programme d'Eau Potable et d'Assainissement du Millénaire* (PEPAM) IDA, P109986, US$55 million, closed in December 2015), more than 2.5 million people gained access to improved water services and 1.0 million people benefited from improved sanitation services. These projects also supported the successful urban water sector reform initiated in 1995, and the preparation/implementation of the rural water sub-sector reform which led to the creation of OFOR in 2014 and to the establishment of the first RWS delegation through a public-private partnership (PPP) in 2015.

16. Under the ongoing UWSP, the World Bank is helping to finance strategic water investments; increase access to sanitation services in urban centers; and support the GoS in the implementation of the second-generation reform of the urban water services. The World Bank is also supporting the ongoing institutional reform of urban sanitation that has resulted in defining a clear roadmap for progressively increasing PSP in the management of urban sanitation facilities.

17. **Under the proposed project, the World Bank's continued engagement would provide an opportunity to build on the lessons learned from its long and successful partnership with the GoS in developing the WSS sector**. The project is aligned with the GoS priorities concerning the achievement of its SDGs and is consistent with the increased focus on institutional reform in the context of urban water second-generation reform and increased PSP in the management of rural water services. In that respect, it is essential to create the conditions for the smooth execution of the first four *affermages*, which are located in the central regions of the country. Four private operators have been recruited to operate about 600 RWS schemes, most of which need to be rehabilitated to ensure sustainability. The central rural areas are also facing below-average access rates to water and sanitation services and poor water quality.

18. **In addition to direct investments in infrastructure to continue to improve access, the World Bank's intervention in rural areas will consolidate its leading advisory role in rural water sector reform**.

Continued World Bank support for this reform will help consolidate performance and address the remaining institutional challenges to the sustainable development of rural water services.

C. Higher Level Objectives to which the Project Contributes

19. **The proposed project will contribute to four of the seventeen SDGs**: end poverty in all its forms everywhere (Goal 1), by promoting access of the poor to basic services; ensure healthy lives and promote well-being for all at all ages (Goal 3) by reducing exposure to unsafe water and unsafe sanitation; ensure availability and sustainable management of water and sanitation for all (Goal 6); and reduce inequality within and among countries (Goal 10), by helping close gaps between urban and rural areas.

20. **By helping to close the access gaps between urban and rural areas and between water and sanitation services, the proposed project fits into the second pathway to poverty reduction and shared prosperity identified in the 2018 Systematic Country Diagnostic of Senegal: to enhance equity and resilience.** By promoting inclusive access to water and sanitation services, the project will contribute to the GoS' poverty reduction plans and is aligned with the current Senegal Country Partnership Framework[3]. Improving key water and sanitation infrastructure is a core element in sharing prosperity through the expected reduction of water-borne diseases, which result in absenteeism from work and/or school, and of the costs associated with medical expenses and loss of income.

21. **This project is also aligned with the "Maximizing Finance for Development" approach, which aims to promote the judicious use of scarce public and concessional resources to "crowd-in" commercial capital and minimize the public debt burden on clients, while delivering sustainable infrastructure services**. As experienced in the urban water sub-sector − where the private operator (Senegal Water Utility (*Sénégalaise des Eaux* - SDE) has invested US$120 million in improving services between 1996 and 2016 −, it is expected that rural water reform designed on the same PPP model, will also crowd-in private sector financing in addition to the public investments provided by OFOR. Under ten-year affermage contracts, the private operators of rural water systems must operate and maintain the infrastructure and are obliged to invest in the renewal of equipment and assets with a lifespan cycle shorter than ten years; while OFOR is in charge of large capital investments. In addition, the proposed project will pave the way to boost household financing of improved and safe sanitation facilities through the introduction of a marketing approach to sanitation (as described in paragraph 11).

22. **The proposed project is well aligned with the objectives of the Scale-up Facility (SUF)** to prioritize projects with transformational and ambitious impact, in view of the very large number of targeted beneficiaries, and its potential to support GoS' poverty reduction plans, and to reduce water borne diseases.

[3] Report #73478

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

23. The project's development objective is to increase access to improved water and sanitation services in selected rural areas and strengthen capacity for water resources management.

B. Project Beneficiaries

26. **The expected total number of beneficiaries is 1.5 million**, of which 365,000 will be provided with access to piped water through household connections and standpipes, and 1,136,000 will be provided with improved sanitation facilities via household latrines, household connections to off-site piped sanitation systems and toilets in schools, health centers, and public markets. In addition, with the installation of chlorination equipment, all existing users of piped water systems will benefit from improved water quality. Finally, the project will have a positive impact on the private sector entities directly involved in construction activities and contracted for service delivery. It will also help strengthen IWRM through improving knowledge, planning and the institutional framework, thereby raising the targeted project area's resilience to climate change.

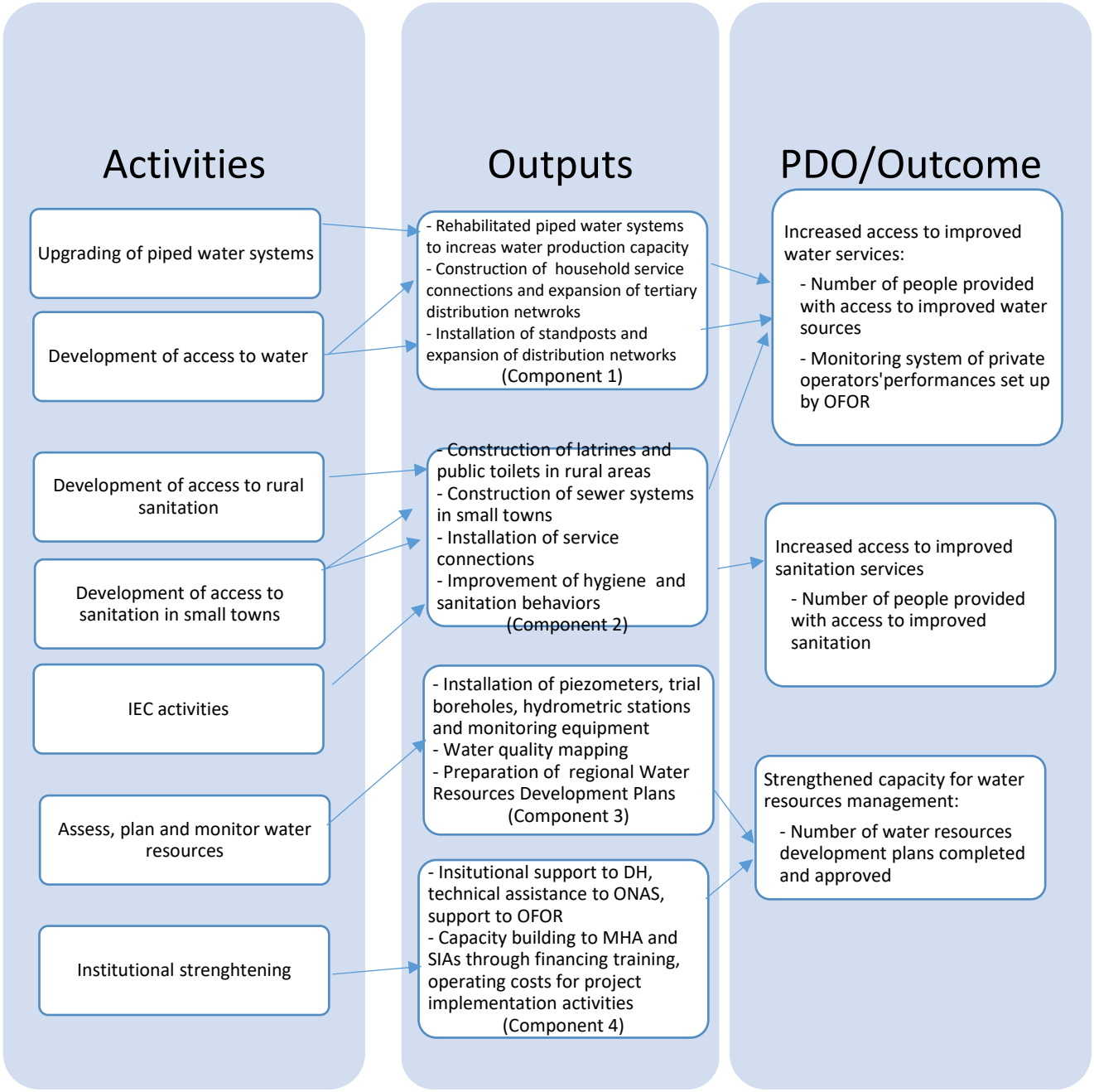
C. PDO-Level Results Indicators

27. The following key performance indicators will measure success in achieving the project development objective (PDO):

Table 1: PDO Indicators

PDO Indicator	Assessed Aspect of PDO
Number of people provided with access to improved water sources under the project	Increased access to water services
Number of people provided with access to improved sanitation under the project (breakdown number of women)	Increased access to sanitation services
Operator monitoring system generating regular reports on performance against key indicators	Improvement of water services
Number of water resources development plans completed and approved	Strengthened capacity for water resources management

Figure 1. Theory of Change



III. PROJECT DESCRIPTION

28. **Project Approach**. To address sectoral challenges, the proposed project will focus on (a) developing access to services through programs for constructing water and sewer service connections, household latrines, stand posts and public toilets; (b) addressing the shortcomings created by the current condition of piped water facilities and the unsafe disposal of wastewater and sludge disposal in small towns; (c) improving knowledge and planning of water resources development; and (d) enabling sectoral institutions to deliver their mandates in the context of ongoing reforms.

29. **Project activities will focus on the Groundnut Basin area, which is home to one third of Senegal's rural population, and which is facing significant challenges with regards to (a) the effective implementation of the RWS sub-sector reform; (b) very low access rates to improved sanitation; and (c) high poverty ratios**. RWS activities will target the areas covered by the four already awarded *affermage* contracts: one contract is for the Thiès and Diourbel regions; one for the Kaolack and Kaffrine regions; one for the Fatick region; and the Notto-Diosmone-Palmarin/Gorom-Lampsar (NDP/GL) *affermage*. The piped systems of these areas need a prompt upgrading to ensure a smooth execution of the PPP arrangements (See Annex 1 for details on the conditions of water facilities). Rural sanitation activities (including the sanitation of small towns) will target four regions (Diourbel, Fatick, Kaffrine and Kaolack). These four regions exhibit very low access rates to improved sanitation (26.3 percent on average, vs. 35.8 percent for rural Senegal) and the highest rates of open defecation in the country (53.3 percent vs. 35.5 percent for rural Senegal). In addition, the project area is characterized by high poverty ratios compared to rest of the country, with regional rates ranging between 48 percent and 68 percent (57 percent on average), compared to a national average ratio of 47 percent.

30. **Selection of project activities**. The selection process of project activities is summarized below:
    (a) The selection of water activities is based on the joint assessments of the condition of the water facilities of the systems of the Groundnut Basin area; a review by OFOR and the private operator of the additional water production needs of the NDP branch; and Senegal's strategy for offering a similar level of water service in rural and urban areas through the increase in coverage of household service connections.
    (b) The selection of sanitation activities reflects the Government's commitment, as expressed in the PSE, to close the gap between water and sanitation in rural areas by providing on-site facilities on a large scale; and builds on the findings of sanitation master plans in small towns to address their specific sanitation problems through off-site sanitation networks and treatment facilities, which will be integrated into the scope of ONAS activities.
    (c) The selection of WRM activities is based on the priority actions identified by DGPRE for improving knowledge of water resources (studies, monitoring tools and water quality mapping) and for setting an adequate planning framework for the development of water resources (master plans).
    (d) The selection of project activities supporting sector reforms is based on the priority actions identified by OFOR to effectively fulfill its basic missions as the *société de patrimoine* of the RWS sub-sector in the areas of asset management and the monitoring of private operators; the

technical assistance needs identified by ONAS to deliver its missions in the rural sanitation sub-sector; and the design by the DA of a pilot program to test the sanitation marketing approach[4].

(e) The project will also provide support to the project coordination unit (PCU) for managing the project, and support to the implementation agencies through the provision of vehicles, office technology (OT) and office equipment, training and the construction and rehabilitation of offices.

A. Project Components

31. The proposed project will consist of four components, summarized below.

Component 1. Rural Water Supply (US$40.88 million equivalent). This component aims to improve water services and expand access through the following sub-components:

1.1 Upgrading of piped water systems to increase water availability and quality, in selected areas through (a) the renewal of electro-mechanical equipment of water production sites; (b) the construction and rehabilitation of water storage facilities; (c) the provision of water production and water distribution meters; (d) the supply and installation of chlorination devices on piped water systems; (e) the expansion of water production capacity by drilling and equipping new boreholes with connection pipes to collect ground water; and (f) the renewal of water distribution networks and water meters.

This sub-component will: (i) rehabilitate the water production, storage and metering facilities of the systems covered by the *affermage* contracts of Thiès/Diourbel, Kaolack/Kaffrine and Fatick and ensure the disinfection of water in all systems; and (ii) expand the production capacity of the NDP branch of the NDP/GL *affermage* by about 6,000 cubic meters (m^3) per day and help rehabilitate networks and metering of the NDP branch.

1.2 The development of access to water in selected areas through (a) the construction of household service connections and the expansion of tertiary distribution networks; (b) the installation of stand posts and the expansion of distribution networks.

This sub-component will: (i) help connect mostly poor households under affordable conditions; and (ii) enable the water services to reach neighborhoods that are currently not being served.

1.3 The provision of consulting services for (a) the control and supervision of Sub-components 1.1 and 1.2; and (b) communication campaigns targeting the beneficiaries of household connections.

Component 2. Sanitation (US$69.13 million equivalent). This component aims to increase access to improved sanitation and ensure adequate disposal of wastewater and sludge through

[4] The location of the pilot program using the marketing approach of sanitation was selected by the DA (a) to avoid competition with rural sanitation activities using different rules; (b) to take stock of experience with the households of the Matam and Saint-Louis regions, which exhibited a willingness to build their own improved latrines. Consequently, the DA proposed to focus its activities on 10 rural municipalities (*communes rurales*) of the Matam region and 13 municipalities of the Saint-Louis region.

the following sub-components:

2.1 Development of access to improved sanitation in selected rural areas through (a) the construction of household latrines; and (b) the installation of public toilets.

This sub-component will provide on-site sanitation facilities to the rural population in four regions (Diourbel, Fatick, Kaffrine and Kaolack), both at home and outside the home, in markets, schools and health centers. The specific features of the selection of contractors for this activity is described below under Sub-component 2.5.

2.2 Development of access to condominial sewerage services and provision of adequate wastewater and sludge disposal in Gandiaye through, (a) the supply and laying of sewer pipes, the construction and equipment of one wastewater pumping station and the construction of household interceptor tanks and service connections; (b) the construction and equipment of a wastewater treatment plant (WWTP) and a STP; and (c) the purchase of one vacuum truck.

This sub-component will equip one small town with a condominial sewer network and will provide adequate wastewater and sludge disposal.

2.3 Development of access to sewerage services and provision of adequate wastewater and sludge disposal in selected small towns through (a) the supply and laying of sewer pipes, the construction and equipment of wastewater pumping stations, and the construction of service connections; and (b) the construction and equipment of WWTPs and STPs.

This sub-component will: (i) develop access to sewerage services in four towns (Diourbel, Nioro du Rip, Guinguinéo, Koungheul) where off-site sanitation is the best option; (i) equip three towns (Nioro du Rip, Guinguinéo and Koungheul) with WWTPs and STPs; and (iii) equip two small towns (Malem Hoddar and Birkilane) where on-site sanitation is the best option with STPs.

2.4 Implementation of a pilot program of the marketing approach to sanitation through (a) the provision of matching grants for the construction of household latrines in selected areas; (b) consulting services for carrying out communication campaigns for behavioral changes; and (c) the construction and equipment of sanitation shops[5].

This sub-component will test the marketing approach to sanitation developed by the DA in the rural communes of the Saint-Louis and Matam regions. The credit will finance 60 percent of the costs of completed and operational latrines. The business developer will ensure that households provide the remaining 40 percent of the costs, and an independent controller will verify that the latrines are completed. The procedures, guidelines and criteria governing the provision of the matching grants will be set forth in a matching grant agreement signed with the business developer. The agreement is described in Annex 2 (paragraph 6).

[5] Sanitation shops are showrooms that display the sanitation facilities promoted by the business developers and will serve as contact points with potential clients.

2.5 Support to the Recipient in the areas of: (a) supervision; (b) communication, information and education, related to the activities under Components 2.1 to 2.4 through consulting services.

IEC activities play a decisive role in generating demand for access to improved sanitation services. Therefore, the implementation of the on-site sanitation component will be based on three types of activities: (i) generation of demand through awareness raising activities on hygiene promotion and behavior change; (ii) construction of on-site sanitation facilities and public toilets; and (iii) quality control of the execution of works. Following this approach, ONAS will recruit contractors, with a separate technical control. Contractors will be invited to present themselves in the form of joint ventures covering both IEC and works execution. IEC activities will be launched upstream to encourage targeted households to acquire a latrine or any other sanitation system that is efficient and compatible with their financial means. Given the large number of structures to be built, it was decided to procure the works/IEC contracts in three lots through requests for proposals with initial selection.

Component 3. Water Resources Management (US$7.33 million equivalent). This component aims to improve the knowledge and planning of the development of water resources through the following sub-components:

3.1 Strengthening the Recipient's capacity to assess and monitor water resources (groundwater and surface water in the eastern regions of Senegal and Casamance) through (a) carrying out hydrogeological and hydrological studies; (b) construction of piezometers, trial boreholes and hydrometric stations; and (c) consulting services and the provision of OT equipment and software for the establishment of a water quality mapping system.

This sub-component will help improve knowledge and monitoring of groundwater and surface water resources in *Sénégal Oriental* and *Casamance* and to design and implement a centralized water-quality mapping system.

3.2 Supporting the Recipient's capacity in planning the development of water resources through consulting services and technical assistance for the preparation of water resources development master plans in selected water basins.

This sub-component will provide planning tools at an adequate geographical level (water basin) for coordinating and validating the water demands of the various water-consuming sectors.

Component 4. Program Coordination, Institutional Support and Capacity Building (US$12.66 million equivalent). This component aims to support sector institutions and reforms, and to enable the PCU to deliver its responsibilities through the following sub-components:

4.1 Support to the Recipient in the areas of project coordination, supervision, financial management (FM), communication and outreach, procurement, monitoring and evaluation (M&E), supervision of implementation of the Safeguards Instruments, including through the

provision of technical assistance, Training, Operating Costs, goods and services for this purpose.

This sub-component will enable the PCU to fulfill its responsibilities in project management.

4.2 Support to the Recipient and sector institutions through (a) support to the Directorate of Hydraulics (DH) through consulting services for the preparation of a feasibility study of water transfers to the central regions and an update of the RWS master plans for selected regions; (b) the provision of technical assistance to ONAS through consulting services; (c) support to OFOR through (i) consulting services for the inventory and management of RWS assets, the update of the financial model; and the design and implementation of a reporting system for monitoring private operators; and (ii) the design, construction and supervision of OFOR's Dakar offices; (d) the provision and installation of monitoring and laboratory equipment for DGPRE and the provision of goods and services for communication activities of DGPRE.

This sub-component will (i) help DH explore solutions for addressing the water quality issues in the Groundnut Basin area; (ii) help OFOR and ONAS fulfill their respective mandates in the context of ongoing sector reforms; (iii) support the pilot implementation of the marketing approach to rural sanitation; and (iv) strengthen DGPRE's monitoring and communication capacities.

4.3 Support to MHA and the Specialized Implementation Agencies (SIAs) by financing expenses related to Training and Operating Costs for the implementation of Project activities.

This sub-component will help strengthen the implementation capacities of the implementation agencies.

B. Project Cost and Financing

32. **Project Cost and Duration**. The project has a total cost of US$130 million. It will be financed by an IDA Scale-up Credit of EUR 107.5 million (US$130 million equivalent)[6]. The GoS has requested that the IDA Credit be in Euros under the IDA Single Currency Lending Pilot Program. The project will be implemented over a period of five years (June 2018-June 2023) to allow sufficient time for the successful achievement of the PDO.

Project Components	Project Cost (Million US$)	IDA (SUF) (Million US$)
1. Rural water supply	40.88	40.88
1.1 Upgrading systems	24.36	24.36
1.2 Development of access to water	14.21	14.21

[6] In accordance with current Republic of Senegal per capita income and IDA 18 lending criteria, the credit will be financed under IBRD terms for flexible loans with a fixed spread and with 25-year maturity including a 10-year grace period.

Project Components	Project Cost (Million US$)	IDA (SUF) (Million US$)
1.3 Works control and supervision and outreach	2.31	2.31
2. Sanitation	69.13	69.13
2.1 Rural sanitation	39.33	39.33
2.2 Condominial sewerage and wastewater and sludge disposal in Gandiaye	3.47	3.47
2.3 Sewerage and wastewater and sludge disposal in small towns	18.66	18.66
2.4 Pilot rural sanitation	2.70	2.70
2.5 Works control and supervision and outreach	4.97	4.97
3. Water resources management	7.33	7.33
3.1 Knowledge of water resources	4.56	4.56
3.2 Planning	2.77	2.77
4. Program coordination, institutional support and capacity building	12.66	12.66
4.1 Project management	6.15	6.15
4.2 Institutional support	4.14	4.14
4.3 Capacity building	2.37	2.37
Total Project Costs	130.00	130.00
Front End Fees	0.00†	0.00†
Total Financing Required	130.00	130.00

†The Recipient will finance the Front-end Fees (US$325,000 equivalent) from its own resources.

C. Lessons Learned and Reflected in the Project Design

33. The proposed project draws on lessons learned in the course of the execution of water PSP schemes; experience gained in the implementation of sanitation projects in West Africa; and through safety net tools developed in Senegal with IDA assistance.

34. **Disputes often arise between the parties to *affermage* contracts concerning their respective responsibilities related to rehabilitation, renewal and maintenance, particularly when the start-up condition of water facilities is poor.** The design of the rehabilitation program, based on joint assessments of the water systems and its upfront implementation under the proposed project will facilitate execution of the contracts.

35. **The social acceptability of PSP schemes largely depends upon the service delivery performance**. The improvement of water quality, water pressure and the reliability and continuity of services that is expected from the upgrading of the piped water systems will likely increase user satisfaction, which will be reinforced by improvement in the level of service brought by the social connection programs.

36. **The Unique National Registry[7] (*Registre National Unique*, RNU) is an adequate instrument of social inclusion**. The RNU will be used for targeting beneficiaries of subsidized services connections (water and sewer).

37. **Convenience, privacy and availability of water are key conditions for the effective use of rural latrines**. This finding is reflected by the selection of the pour-flush latrine (PFL) option for the household latrine program. The PFL is the preferred choice of women because it is easy to clean. It is also consistent with the mainstreaming of in-house water service through social connections.

Box 2. Lessons from Fecal Sludge Management in Dakar

Through the implementation of its pilot program on fecal sludge management in the Dakar peri-urban areas (financed by the Bill and Melinda Gates Foundation), ONAS has capitalized on solid experience to better structure the on-site sanitation market. A new approach to on-site sanitation has emerged considering the sector as a chain, a whole set. Through its interventions, this program attempts to encourage people to "act locally while thinking globally". Every tool developed not only aims to improve the concerned segment of the chain, but also, in conjunction with the other segments, to optimize overall performance of on-site sanitation through improved profitability of the emptying companies, who are the main industry players, and decreased service costs. From sludge collection to treatment and recovery through transportation, various tools have been developed and tested since the program began less than three years ago. These tools include the provision of adapted toilets for people living in flood-prone areas; organization of the demand for emptying services through a call center; certification as a business organization tool; the guarantee fund as an instrument for the renewal of emptying trucks; a communications package, and so on. The results thus far obtained have motivated midterm sharing of these tools, which will be optimized for the rest of the program, to make them the pillars of a sustainable model of fecal sludge management likely to be replicated across the country.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

38. The proposed project will replicate the implementation arrangements of previous IDA-financed projects, taking into account the shift from urban to rural areas, as follows:
    (a) Project oversight will be the responsibility of a Steering Committee (*Comité de Coordination et de Suivi*, CCS) that brings together representatives of the MHA, sector institutions, the regional development agencies, the association of local elected representatives and MEFP.
    (b) The existing PEPAM PCU will be responsible for day-to-day project coordination and implementation, including: (i) carrying out FM and procurement activities; (ii) preparing and implementing annual work plans and budgets, to be approved by the CCS and the World Bank; (iii) ensuring compliance with safeguards documents for project activities; and (iv) monitoring and

[7] The RNU is located at the General Delegation of Social Protection and National Solidarity, which is under the aegis of the Presidency of the Republic. The RNU is updated every four years contains the names of the extremely poor population in Senegal (about 450,000 in total).

evaluating project activities and preparing progress reports and M&E reports. The PCU shall have sole fiduciary responsibility in the implementation of the project.

(c) Implementation of the first three components of the project will be supported by three SIAs: OFOR for the rural water supply component; ONAS for the sanitation component; and DGPRE for the water resources management component.

(d) The fourth component (Project Management, Institutional Support and Capacity Building) will be implemented by the PCU in collaboration with OFOR, ONAS and the technical departments of the MHA, namely DGPRE, DH and DA.

(e) In supporting the implementation of their respective components, the SIAs will be responsible for: (i) assisting the PCU with quality control of the procurement documents; (ii) the technical management of activities, including the provision of quality control for infrastructural work and ensuring that appropriate safeguard requirements and standards are maintained; and (iii) the review of contractors' payment requests for approval by the PCU.

39. Arrangements and procedures for the institutional coordination and execution of the project, the fiduciary aspects; for M&E and reporting; for safeguards monitoring and mitigation; and for the responsibilities and mandate of the SIAs will be detailed in the Project Implementation Manual (PIM). The PIM will be submitted to the Association no later than one month after credit effectiveness. It will be prepared by updating the existing PIM of the PCU to reflect the features and activities of the project.

40. The PCU and SIAs are fully equipped with the capacity to implement such a project, as they have demonstrated through the implementation of previous IDA-funded projects. IDA implementation support missions of the ongoing UWSP have consistently rated the procurement and FM of the project as satisfactory. Recent reviews of the ongoing project concluded that the implementation of the environmental and social protection measures was also satisfactory. There are no overdue audits under projects implemented by the proposed PCU. Updated assessments of the capacities of the implementation agencies were carried out during project pre-appraisal in February 2018 and it was concluded that the FM risk and the Procurement risk are moderate. The assessments identified capacity strengthening actions, particularly concerning the adaptation of procedures to the specific activities of the proposed project: these are detailed in Annex 2.

B. Results Monitoring and Evaluation

41. **M&E will be managed by the PCU, which includes an experienced M&E unit**. The PCU is equipped with a multi-project monitoring software to follow the execution of all projects in the WSS sector and to help prepare annual sector reviews; and to manage all household surveys related to water and sanitation (including beneficiary satisfaction surveys) and impact evaluation studies. OFOR and ONAS routinely gather and compile information on access to services.

42. The PCU will collect data from the implementation agencies and works supervision teams to elaborate the project monitoring indicators, as follows:

(a) Private operators will provide data on water access, service connections, and operating performances, which will be verified by OFOR before transmission to the PCU.

(b) ONAS will provide data on access to improved sanitation (for rural areas and small towns).

(c) The DA will provide data on the results of the pilot program.
(d) Intermediate indicators linked to works/goods contracts (on rehabilitation, installed connections, stand posts, and wastewater and sludge treatment) will be drawn from the progress reports prepared by the supervision engineering firms.
(e) The status of indicators linked to institutional strengthening will be assessed by the implementation agencies and validated by the PCU.
(f) The indicators of beneficiary satisfaction will be collected through surveys carried out at project start-up, mid-term and completion.

43. **A specific indicator of citizen engagement has been included in the result framework**. Monitoring will be based on satisfaction surveys to be carried out among users of water and sanitation facilities at project start-up, midterm, and completion. Gender-disaggregated results showing the number of beneficiaries of access to services and the results of the satisfaction surveys will be made available.

C. Sustainability

44. **The GoS' ownership of sectoral reforms and policies and of the long-term objectives of the water and sanitation sector is a key ingredient of sustainability**. This ownership was demonstrated by the establishment of OFOR; support for the introduction of PSP in RWS; and most recently by the approval of the harmonization of water tariffs in the rural systems. Furthermore, the 2017 Sector Policy Letter formulates an ambitious roadmap for achieving universal access to water and sanitation.

45. **Restoration of the quality and reliability of rural water services through the systems upgrading component of the project will reinforce technical sustainability, and as noted above, social acceptability of the PPP schemes**.

46. **An additional element of social sustainability is the alignment of policies for the rural access to services with urban policies**. Most of the urban population has for a long time benefitted from free water service connections and for some time from almost-free sewer connections, while the rural population has been largely ignored, except for scattered subsidized rural latrines programs. The proposed project will expand the urban water policies to villages, and the urban sanitation policies to rural communities and small towns.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

47. The overall risk rating for the project is assessed as moderate (see details above in the Systematic Operations Risk-Rating Tool). The potential risks identified and the corresponding mitigation measures are as follows.

48. The political and governance risk is rated as low. Senegal is a beacon of stability, political liberty and cultural influence in West Africa and beyond. Since independence the country has benefitted from civilian rule and political stability. The overall governance environment is conducive to reforms of the

water supply and sanitation sectors, and in the reform process, the WSS sector is ahead of many sectors.

49. On the macroeconomic side the potential risk is rated as low, as the country has been regaining economic momentum with GDP growth rates over six percent during the last three years.

50. Regarding sector strategies and policies, the potential risk is rated as moderate. The lack of adoption by the Government of measures adapted to the fiscal framework of delegated public water services in rural areas might represent a risk for the viability of the affermage contracts. This issue is being discussed with the GoS in the policy dialogue under the ongoing UWSP.

51. The risk associated with institutional capacity for implementation and sustainability is assessed as substantial. ONAS, the implementation agency for sanitation, the largest component of the proposed project, will operate for the first time in rural areas, and the intervention is at an unprecedented scale. To mitigate this risk, it was agreed to (a) strengthen the ONAS team with technical assistance for the implementation of rural latrines programs; (b) adopt specific allotment and procurement methods for contracting the works; (c) streamline the process of demand generation (which is often overly complex and a source of delays); and (d) establish independent control over the compliance of the household latrines with technical standards and household specific needs. Also, in line with ONAS strategy to disengage from direct operating responsibilities, the operation and maintenance of the off-site sanitation facilities to be built in small towns will be delegated to the private sector.

52. The risks associated with technical design and fiduciary are moderate. The PCU and the project implementation agencies are experienced and well-versed in the implementation of this type of operation and the technologies to be deployed are fully mastered by all stakeholders. The proposed project is following a series of similar operations funded by IDA in a continuous cycle over a period of two decades.

53. The environmental and social risk is rated as moderate. The project involves rehabilitation of water production and storage facilities, expansion of distribution networks, construction of WWTPs and a STPs, and the construction of public toilets and household latrines. Works will generate dust emissions and noise pollution, and will produce waste, and work accidents may occur. The major risk is related to loss of income sources or means of livelihood for the population, but only a minimal amount of land acquisition is needed for the water and sanitation facilities. No displacement of people is anticipated at this stage, but during project implementation, after the design studies are completed, the Recipient will prepare a Social Impact Assessment. With the results of this assessment, specific Resettlement Action Plans (RAPs) will be prepared in consultation with the affected stakeholders, submitted to the World Bank for approval, and will be fully executed before the commencement of related civil works.

54. The stakeholders risk is rated as moderate, in view of the favorable conditions offered to households to gain access to services (subsidized water and sewer service connections, and subsidized latrines) and of the likely improvements in the quality of services. The behavioral changes needed to successfully implement the sanitation programs will include various stakeholders for successful information dissemination and monitoring of adherence.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

55. **The main outcome expected from the proposed project is access to improved water and sanitation services at an affordable cost for about 1,500,000 people.** The project will also consolidate rural water and sanitation sector reforms by strengthening the performance of public and private entities to manage services. Access to improved water and sanitation will contribute to freeing-up time dedicated to fetching water for women and youth; improve the environmental and health conditions of the population by reducing the incidence of water borne diseases; and reduce rural water systems operating costs through the reduction of water losses and maintenance costs.

Rationale for Public Sector Provision/Financing

56. **There is a strong rationale for public sector financing to support these investments, given the urgency and need for increased water and sanitation services and sustained water resources management**. Expanding access to water and sanitation services in underserved rural areas and managing water resources require public sector intervention and funding. Revenue mobilization and private sector resource availability are limited, and as such public-sector financing is critical and justifiable.

57. **Considering the social character of water services, the rural sector still needs to get on-lent concessional funds to develop the infrastructure and maintain the price of services at a socially affordable level**. The involvement of the private sector through *affermage* contracts will help to generate productivity gains and reduce operating costs. Rural sanitation concerns the most disadvantaged strata of the population and therefore needs to be subsidized through public service provision.

Value Added of World Bank's Support

58. **The proposed project will be a continuation of the World Bank support that has been provided to the water and sanitation sector in Senegal for more than two decades**. The World Bank involvement in supporting the GoS in the implementation of the reforms and in large-scale efforts to close the access gap between rural water and rural sanitation will be decisive in creating confidence and visibility for other donors to engage in the long-term investment programs of the sector. The World Bank value added will be high at the project implementation phase, which will benefit from constant support provided by a decentralized team working in the water sector in Senegal for more than a decade.

Economic Analysis

59. The economic analysis consists first of a cost-benefit analysis (CBA) to assess the economic impact of the rural water component of the project. The economic benefits include incremental revenues (water sales valued with current tariffs), consumer surplus accruing to water users and cost savings

resulting from the upgrading of systems. In sanitation, where the benefits are obvious but difficult to quantify, a cost-effectiveness (CE) analysis has been conducted based on the annual per capita costs (annualized investment costs and annual operations and maintenance (O&M)) costs of the various sanitation solutions that provide identical results concerning excreta disposal and wastewater and sludge disposal.

60. *Rural Water Supply*. The economic internal rate of return (EIRR) of water-related activities is estimated at 8.2 percent and the net present value (NPV) using a discount rate of 6 percent[8] is estimated at U$9.5 million. Albeit modest, this EIRR is higher than the one observed in previous interventions in rural areas in Senegal (for instance, 7 percent in the PEPAM-IDA). These calculations have also been conducted separately for the sub-components. Both yield identical EIRRs (8.2 percent), the sub-component devoted to the improvement of access generates a NPV of US$3.6 million, and the sub-component devoted to systems upgrading a NPV of US$5.8 million.

61. The overall results are significantly sensitive to the variation of water demand, which primarily affects the sub-component devoted to the development of access. The very strong demand of rural households for service connections should, however, mitigate this risk.

62. *Sanitation*. Preliminary results show that:
    (a) The annual per capita cost (US$14.3) of the expansion of sewerage services through social connections programs in Diourbel −which is already equipped with a sewerage system and a treatment plant−, is competitive with the cost of on-site sanitation solutions (US$13.7).
    (b) The annual per capita cost of a new condominial sewerage system (US$22.7) is 66 percent higher than the cost of on-site sanitation, and is comparable with what was observed in the UWSP. The annual cost of new conventional sewerage systems in small towns is even higher (US$30.8). However, it should be noted that non-economic criteria (urbanization features, soil and water table conditions) eventually dictate the sanitation option to be adopted.
    (c) There will be potential cost savings for the households benefitting from sewer connections, as the maintenance costs for desludging on-site facilities is higher than the annual cost of the ONAS surcharge billed to water users in sewered centers.

63. *GHG Emissions*. The impact of GHG emissions is measured:
    (a) In the case of the rural water component of the project by the variation of the results of the CBA: that is, by taking into account the net GHG emissions, valued with the low and high shadow prices of carbon (SPC); and
    (b) In the case of the sanitation component, which was subject to a CE analysis, by assessing whether the technical solutions adopted by the project would remain the least-cost solutions when taking into account the net GHG emissions.

64. While increasing access to the water supply networks will see net emissions rise by 6,298 tCO_2-eq, the project's upgrading activities will reduce net emissions by -12,070 tCO_2-eq. This means that, due to the energy efficiency gains from nonrevenue water (NRW) reduction, the project's water supply

[8] The World Bank's guideline on discount rate, issued in May 2016, recommends the use of a discount rate twice the long-term per capita growth rate. As Senegal's GDP per capita has grown at an average rate of 3.0 percent over 2014-2017, a 6 percent discount rate has been used in this analysis.

activities overall will result in estimated net emissions of -5,772 tCO_2-eq. The inclusion of CO_2 emission cost savings in the economic evaluation affects slightly the results of the CBA, as shown in Table 3.

Table 3: Impact of GHG Emissions on the Results of the CBA

Results	EIRR (%)	NPV (US$, millions)
Excluding GHG emissions	8.19	9.46
Including GHG emissions with low SPC	8.22	9.58
Including GHG emissions with high SPC	8.24	9.71

65. Overall, sanitation services will experience net emissions of 44,060 tCO_2-eq. When valued with the high SPC, the net emissions will have a NPV of about US$1.89 million. This amount has to be compared to the cost of alternative treatment solutions that would eliminate the net emissions (through an activated sludge process combined with nitrogen and methane removal). Typically, these solutions entail investment costs that are at least twice the cost of the lagooning process adopted under the project. As the cost of the project-built WWTPs is US$2.72 million, this means that the project's technical solutions will remain the least-cost solution when taking into account the GHG emissions.

Financial Analysis

66. The financial analysis aims to assess (a) the impact of the water-related project activities, as measured by the financial internal rate of return (FIRR) and (b) the financial viability of water and sanitation services in the project area.

67. FIRR calculations are derived from the CBA by excluding benefits that do not translate into financial flows for the operators and for OFOR (consumer surplus and chlorination cost savings accruing to households) and by reintegrating taxes. The FIRR of the water component is estimated at 4.3 percent.

68. *Financial impact on OFOR*. OFOR was effectively established in 2014 and started implementing RWS projects in 2015 with the financial support of the national budget along with that of several external support agencies. In the medium-term, OFOR is expected to finance its operations through a portion of water bill revenues, the so-called "OFOR fee "(*prix patrimoine*, Pp), i.e. the difference between the contractual remuneration of private operators and the tariffs paid by water customers. For the time being, the NDP/GL system is the only system that is generating revenues. The fees received from the NDP/GL operator represent about 5 percent of OFOR's cash operating expenditures.

69. The proposed project will help facilitate the execution of the *affermage* contracts by upgrading the water facilities. It will help increase water revenues and OFOR's remuneration through the installation of new service connections and stand posts, and the additional water production capacity for NDP. Equally important, the activities of Component 4 of the proposed project that are related to OFOR' s institutional strengthening will enable OFOR to obtain a clear vision of the financial viability of the RWS sub-sector through (a) inventory of RWS assets and the establishment of an assets management system and (b) the updating of its financial model.

70. *Financial impact on ONAS*. The annual operating expenditures of the sanitation facilities to be constructed in small towns under the project are estimated at CFAF 155 million. This amount represents about 1.3 percent of the operating expenditures of ONAS in 2016. The annual incremental revenues of ONAS are estimated at CFAF 30 million. Even though the annual operating cash-flow of the project-financed sewerage operations is negative, it will have a marginal impact on the financial position of ONAS. However, this will likely prevent the adoption of an *affermage* contract for a PSP scheme for the new facilities: a services contract would be a more realistic option in this case.

B. Technical

71. The water and sanitation investment programs supported by the proposed project originates from programs designed by the implementation agencies in close coordination with the PCU. No major technical issues are expected because the technologies being considered for WSS are proven and well established. The implementation of the unusually large-scale rural latrines program will be facilitated by its allotment to three contractors and the simplification of the process of demand generation. The pilot activity testing of the marketing approach to sanitation will enable adjustment to the effective demand of households and to the supply response of business developers.

72. The design of the other sub-components −WRM studies and works, project management and institutional support− is straightforward.

C. Financial Management

73. The PCU will have overall FM fiduciary responsibility for the proposed project. The FM arrangements for the proposed project will be based on the existing arrangements in place under the UWSP. An assessment of the FM capacity of the PCU was carried out in February 2018. It found that the overall FM performance of the UWSP is satisfactory. Staffing has remained adequate and proper books of accounts and supporting documents have been kept for all expenditures. The existing FM system satisfies the World Bank's requirements under the World Bank Policy and Directive for Investment Project Financing effective in 2017, as (a) the FM team of the PCU, comprised of an administrative and financial manager and one accountant is familiar with World Bank procedures; (b) the PCU is equipped with a multi-project accounting software that will easily integrate the proposed project's accounts; (c) an adequate internal control system is in place; and (d) adequate budget preparation and monitoring tools are also in place. The last UWSP audit for the fiscal year ending December 31, 2016 was submitted on time and was unqualified. The interim unaudited financial reports for the ongoing project were also submitted on time.

74. The overall FM risk for the proposed project is moderate. Existing FM arrangements are adequate to provide, with reasonable assurance, the accurate and timely FM information on the status of the project that is required by the World Bank. However, in order to maintain an adequate internal control environment and the clear segregation of duties, the existing fiduciary procedures of the PIM of the PCU will be updated to reflect the proposed project's activities no later than one month after credit effectiveness. In addition to the external audit of project accounts, the audits of the financial

statements of OFOR and ONAS will be transmitted to IDA no later than six months after the end of each fiscal year.

D. Procurement

75. Procurement for goods, non-consulting, and consulting services to be financed by the credit will follow the procedures specified in the "World Bank Procurement Regulation of Goods, Works and Non-Consulting Services under "World Bank Procurement Regulations for Borrowers under Investment Project Financing" dated July 1, 2016 and revised in November 2017 and the World Bank's Anti-Corruption Guidelines: "Guidelines on Preventing and Combatting Fraud and Corruption," revised in June 2011.

76. In line with World Bank's requirements, an assessment of the procurement capacity of the PCU was carried out in February 2018. The assessment found that (a) the procurement team of the PCU is familiar with World Bank procedures and will be strengthened by recruiting another procurement specialist who will be assigned on a part-time basis to work for the proposed project; (b) the PCU is equipped with an information system (e-Procure Manager), which is adequate for managing the procurement of the proposed project.

77. The PCU, in collaboration with ONAS and OFOR has worked on a project procurement strategy for development (PPSD). The PPSD focused on the high value works under Components 1 and 2. One of the conclusions of the PPSD is that the foreseen works should be divided into two groups based on: (i) technical characteristics; (ii) the conclusions of the market analysis; and (iii) the need for ensuring an adequate demand generation process. Group 1 corresponds to the works of Component 1 and Sub-components 2.2 and 2.3. Group 2 corresponds to Sub-components 2.1 and 2.4, which require specific social and community-based activities before moving into implementation.

78. The implementation agencies (OFOR, ONAS and the technical departments of MHA) have a proven experience in procurement procedures for works, goods and consulting services through their respective committees and units in charge of quality control of national procurement processes. The PCU will ensure quality control of the procurement documents transmitted to IDA and will provide procurement support to the implementation agencies.

E. Social (including Safeguards)

79. ***Social Inclusion***. The proposed project relies on pro-poor policies to develop access to safe water and improved sanitation through the installation of subsidized water service connections, stand posts, subsidized sewer connections and household latrines. The average cost of connections (about CFAF 100,000 for water service and more than CFAF 200,000 for sewer service) is the most significant barrier for the poor in accessing services, whereas monthly water bills are generally affordable and are less costly than alternative water supplies. Subsidized connections programs have been extensively used in Senegal's urban areas, but the urban programs use selection criteria based on housing and neighborhood features that are not relevant in rural areas and also require the beneficiaries to contribute about CFAF 20,000 per connection. The proposed project will follow a different approach. First, promotional campaigns will inform the population of program features and

will help to establish lists of potential candidates, among whom households belonging to the RNU will be given priority, and contribution will not be required from beneficiaries.

80. ***Gender***. Women represents more than half of project beneficiaries, and they are the ones responsible for household activities, including the provision of water, sanitation, and hygiene. A recent survey[9] found that, in the Groundnut Basin area, 88 percent of adult women and 41 percent of young girls collect water and only 18 percent of boys do. In addition to spending significant time in fetching water, girls and women clean the latrines, and act as the primary caretakers of sick people. Poor water quality increases the number of cases of waterborne diseases and diarrhea, and it negatively affects women more than men because of their responsibility. Women and girls also express their concerns over the use of private and public toilets because they are afraid of being seen or sexually harassed. The project will seek to address specific gender-related needs through the active participation of women in the sanitation and hygiene awareness campaigns, their involvement can help in the design of sanitation facilities that will address their special needs and requirements.

81. The proposed project will address the following specific gender-sensitive needs, and will generate benefits that are particularly important to women, as revealed in discussions with the Recipient, population and local authorities during the project preparation:
    (a) Better quality water in order to reduce incidents of waterborne diseases and diarrhea. Improved water quality would reduce the amount of girls' and women's productive time and cost being spent taking care of sick members of households, as well as the associated costs, and
    (b) Improved access to private and public water and sanitation facilities that offer women and girls privacy and security.

82. To address these concerns, under the project, specific gender-sensitive actions will be taken, including:
    (a) Strongly encouraging women's participation in choosing the locations of household connection or water public stand-pipe to be sure that they are positioned such that: (i) they are at a reasonable walking distance from the beneficiary households; (ii) the paths leading from the house to the public taps do not cross any unsecure place; (iii) the public taps have electric lighting, and if possible, that there will be lighting all along the path used to go to collect water; and (iv) the locations and designs of private and public toilets address the needs and concerns of women and girls, so that their privacy and security are assured. At every site where public stand pipes will be constructed, a specific review will be conducted to ensure that the concerns raised by the women are being well considered and that the proposed gender-sensitive actions are carried out in a satisfactory manner.
    (b) Installing chlorination devices on about 580 water supply systems to improve the quality of water, and carrying out regular testing of the water.
    (c) Developing communication campaigns for behavioral change to sensitize population on hygiene and sanitation issues and the maintenance of sanitation facilities.

[9] Household survey of rural water demand (Rural water tariff study – Artelia/Sher/EDE – November 2016).

83. To monitor the impact of these gender-gap related actions, it is proposed that the following indicators be included in the Result Framework:
    (a) The satisfaction rate of female users of WSS services and facilities provided by the project regarding responsiveness to their needs and requirements;
    (b) Water quality tests taken at consumer water points to ensure that the water meets the required standards; and
    (c) The number of women who have been provided with access to improved sanitation under the project.

84. **Social Impacts, Labor Influx and Gender-based Violence (GBV)**. The project will set up an Environmental, Social, Health, and Safety Action Plan (ESHSAP), taking into account good environmental and social practices. The ESHSAP will integrate technical activities, environmental and social management measures, health and safety of workers and communities. This will include sensitization on water-related diseases, sanitation issues and sexually transmitted infections (STIs) and HIV/AIDS; gender and capacity-building aspects; IEC on GBV and support for vulnerable groups; monitoring recruitment on the site; accident reports; a grievance redress mechanism (GRM). The basic principle is an approach that takes charge of the environmental and social aspects that is shared and harmonized between and among the PCU, the implementation agencies, contractors and service providers.

85. All bidding documents for civil works will have social clauses embedded in the language, to enable contractors to follow up on social due diligence and to mitigate any anticipated negative impacts and risks. Contractors will adopt a code of conduct for their workforce to be included in their contractor environmental and social management plan (CESMP). The supervising engineer will be responsible for overseeing the implementation of the social clauses.

86. Social impacts will be managed diligently through monthly progress reports that will be shared with the World Bank. However, any serious or severe impacts related to the environment, occupational health and safety, GBV and other impacts of labor influx (likely of limited size) must be specifically documented and transmitted to the World Bank within two days. The latter will then, through its GRM, decide whether the incident or situation meets the criteria for a “serious event” and/or whether suspension of the project is appropriate.

87. ***Citizen engagement***. Communities and municipalities within the project areas will be involved in identifying priority investments in their respective areas, through public consultations and meetings. The concerns of communities and stakeholders will be taken into account at all stages of the project. They will be discussed and the most relevant concerns will be integrated into the design, implementation and monitoring of the project. The points of view of community members will be well analyzed in the choice of infrastructures to be designed and constructed for them. A beneficiary satisfaction survey that gauges improvements in WSS service delivery in targeted areas will be conducted at the project’s start, mid-term review and again at completion, and relevant indicators will be included in the results framework and monitored over the life of the project. The project will also establish a grievance redress system dedicated to addressing complaints related to the project works. A beneficiary feedback indicator is included in the Results Framework.

88. ***Involuntary resettlement***. The project will include rights-of-way for the water distribution and sewer networks and minimal land acquisition for stand posts, public toilets, pumping stations and treatment facilities. However, the specific locations of project sites in the targeted areas are not yet known and are to be determined once the design studies are completed. Therefore, the Recipient, through the PCU, has prepared a Resettlement Policy Framework (RPF) that has been consulted upon and cleared by the World Bank. The RPF was disclosed in-country on April 12, 2018, and on April 14, 2018 at the World Bank web site. The RPF outlines the principles and procedures to be followed in the event of land acquisition, impact on assets, and/or loss of livelihoods and includes a GRM. During project implementation, the Recipient will prepare a Social Impact Assessment to determine whether land will be acquired and/or whether project activities will create restriction of access or loss of assets. Then, in accordance with the results of this assessment, specific RAPs will be prepared in consultation with the affected stakeholders, submitted to the World Bank for approval, and will be fully executed before the commencement of related civil works.

89. ***Consultations***. The consultations should cover measures to mitigate the impact of resettlement on any host communities, including: consultations with host communities and local authorities; arrangements for the prompt tendering of any payment due the hosts for land or other assets provided to project-affected persons (PAPs); conflict resolution involving PAPs and host communities; and additional services (such as education, water, health, and production services) in the host communities, to make them at least comparable to services that are available to PAPs.
90. ***Grievance procedures***. RAPs should provide mechanisms for ensuring that an affordable and accessible procedure is in place for the third-party settlement of disputes arising from resettlement. These mechanisms should take into account the availability of judicial and legal services, as well as community and/or traditional dispute settlement mechanisms. Procedures will be shared with stakeholders and will identify those responsible for the entire chain, as well as the time required to manage grievances and all possible remedies, without any form of constraints.

F. Environment (including Safeguards)

91. The proposed project is classified as Category B, since the potential negative impacts are expected to be site specific, moderate, and easily manageable. In addition, conventional and well-mastered wastewater and sludge treatment technologies envisaged under the project should minimize the potential risks and impacts. Three World Bank safeguard policies are triggered under the project: OP/BP 4.01 on Environmental Assessment; OP/BP 4.11 on Physical Cultural Resources; and OP/BP 4.12 on Involuntary Resettlement.

92. As mentioned above, the specific areas of intervention are not yet known. Consequently, the Recipient, through the PCU, prepared an Environmental and Social Management Framework (ESMF) that has been consulted upon and cleared by the World Bank and the Directorate of Environment (*Direction de l'Environnement et des Établissements Classés*, DEEC), which is in charge of issuing the environmental license for project implementation. The environmental license was issued by DEEC on March 15, 2018, and the ESMF was disclosed in-country on April 12, 2018, and on April 14, 2018 at the World Bank web site. The ESMF contains measures and plans to reduce, mitigate, and/or offset adverse impacts and to enhance positive impacts; provisions for estimating and budgeting the costs of such measures; and information about the agency or agencies responsible for addressing project

impacts. During project implementation, the screening process will determine whether a subproject-specific Environmental and Social Impact Assessment (ESIA) or an Initial Environmental Analysis (*Analyse environnementale initiale*, IEA) will be required in accordance with the national environmental legislation. Any specific ESIA/IEA prepared in accordance with the screening results will be approved in consultation with all the stakeholders before the concerned activity begins.

93. All bidding documents for civil works will have environmental clauses embedded in the language, to enable contractors to follow up on environmental due diligence and to mitigate any anticipated negative impacts and risks. In addition, chance-find procedures will be included in the contractor contracts, and the CESMP will include measures to manage the physical cultural resources. The supervising engineer will be responsible for overseeing the implementation of the environmental and social clauses.

94. The Recipient has reasonable capacity for implementing environmental and social safeguard measures in water and sanitation projects. Recent implementation support missions of the UWSP have found that the implementation of ESIAs, RAPs and ESMPs is appropriate and the safeguard rating is Satisfactory. The safeguards team of the PCU is comprised of an experienced safeguards specialist who is assisted by a social safeguards specialist. In view of the increased workload on social aspects, OFOR and ONAS will each recruit a social specialist, no later than six months after credit effectiveness. The same institutional framework used for the UWSP will be adopted for the proposed project, with the PCU monitoring overall implementation of the project's safeguard instruments (ESMF, RPF, and any additional safeguard documents), and with OFOR and ONAS being responsible for implementing their respective portions of the ESIAs/IEAs as they are related to water and sanitation activities. An amount of US$1.08 million is earmarked in the project budget to support the implementation of the safeguard measures.

G. Other Safeguard Policies (if applicable)

95. **Climate Change Mitigation co-benefits.** As a result of NRW reduction in the delegated perimeters for RWS, Component 1 will contribute to energy savings, greenhouse gas (GHG) reduction and climate change mitigation. This will result in annual CO2 emissions reduction. In addition, the WRM activities under Component 3 can potentially lead to more efficient use of groundwater.

96. **Climate Change Adaptation co-benefits**. There are moderate climate risks to the outcome and service delivery of the project. The exposure of project sites to climate change is considerable: Increased temperature and drought risks will increase pressure on the already limited water resources in Senegal, and population movements from more marginal zones may further increase the strain on infrastructure in recipient areas. These climate change related risks will be reduced, however, both by the project design and the larger sector context. The project will not only upgrade critical water and sanitation infrastructure, but will also pro-actively reduce risks through its soft components. Component 3 will also promote the efficient use of water resources and the best allocation among competing uses, thereby alleviating the water stress being experienced in the Groundnut Basin area. Component 4 will support the GoS in implementing reforms in the WSS sector and will improve available capacity. It will thus also improve water resources management and raise the resilience of area residents to climate change. Climate change-related risks are further reduced

by the relatively favorable development context, including strong economic growth in recent years; a comprehensive legal and contractual framework in the WSS sector; the strong sector institutions; and existing water resources management programs. Considering these modulating factors, the overall risk to project outcomes is expected to be moderate. Furthermore, a successful implementation of the project will help Senegal better manage climate change impacts by providing its rural and small-town population with improved safe water and sanitation services that will be more robust in responding to the expected increase in extreme temperature-, drought-, and precipitation-events.

97. **GHG Accounting.** The net emissions of the project are estimated at 38,288 tCO2-eq over the life of the project, while the gross emissions are estimated to be 176,646 tCO2-eq. On average, the project generates estimated net emissions of 1,277 tCO2-eq annually (-192 tCO2-eq for water supply activities and 1,469 tCO2-eq for sanitation activities). While increasing access to the water supply network will see net emissions rise by 6,298 tCO2-eq, the project's NRW reduction activities will reduce net emissions by -12,070 tCO2-eq, meaning that the project's water supply activities under Component 1 generate estimated net emissions of -5,772 tCO2-eq due to the energy efficiency gains resulting from NRW reduction. The project locks in the use of gravity-based distribution systems. The sanitation services will experience net emissions of 44,060 tCO2-eq. The use of solar power at two STPs for Malem Hoddar and Mbirkilane also reduce the net emissions of sanitation activities by -1,068 tCO2-eq compared to a scenario where 100 percent of all sludge treatment would use grid-connected electricity. While the project is overall emissive, this is to be expected for a project that is expanding access to wastewater and sludge treatment in a rural area using anaerobic treatment technologies. These results are quite modest on the 30-year timeline for the economic life of the project.

H. World Bank Grievance Redress

Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit *http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service*. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

Project Development Objective(s)

The project's development objective is to increase access to improved water and sanitation services in selected rural areas and strengthen capacity for water resources management.

PDO Indicators by Objectives / Outcomes	DLI	CRI	Unit of Measure	Baseline	Intermediate Targets				End Target
					1	2	3	4	
Increase access to improved WSS services in selected rural areas and strengthen capacity for WRM									
People provided with access to improved water sources		Yes	Number	0.00	115,000.00	230,000.00	365,000.00	365,000.00	365,000.00
People provided with access to improved sanitation services		Yes	Number	0.00	200,000.00	415,000.00	660,000.00	911,000.00	1,136,000.00
Operator monitoring system generating regular reports on performance against key indicators			Yes/No	N	N	Y	Y	Y	Y
Water resources development master plans completed and approved			Number	0.00	0.00	3.00	5.00	5.00	5.00
Number of women provided with access to improved sanitation under the project			Number	0.00	100,000.00	208,000.00	330,000.00	456,000.00	568,000.00

Intermediate Results Indicators by Components	DLI	CRI	Unit of Measure	Baseline	Intermediate Targets				End Target
					1	2	3	4	
Component 1: Water supply									
New piped household water connections that are resulting from the project intervention			Number	0.00	10,000.00	20,000.00	30,500.00	30,500.00	30,500.00
Improved community water points constructed or rehabilitated under the project			Number	0.00	50.00	100.00	200.00	200.00	200.00
Piped water systems equipped with chlorination devices under the project			Number	0.00	300.00	580.00	580.00	580.00	580.00
Water production facilities rehabilitated under the project			Number	0.00	71.00	171.00	271.00	371.00	371.00
Water sample tests meeting bacteriological standards			Percentage	0.00	0.00	98.00	98.00	98.00	98.00
Component 2 : Sanitation									
Household latrines constructed under the project			Number	0.00	20,000.00	40,000.00	60,000.00	80,000.00	100,000.00
Household sewer connections constructed under the project			Number	0.00	0.00	0.00	2,500.00	5,100.00	5,100.00
Additional wastewater treatment capacity installed under the project			Cubic Meter(m3)	0.00	0.00	0.00	1,500.00	4,900.00	4,900.00
Additional sludge treatment capacity installed under the project			Cubic Meter(m3)	0.00	0.00	0.00	80.00	145.00	145.00
On-site sanitation facilities constructed under the sanitation marketing approach			Number	0.00	1,500.00	3,500.00	6,000.00	8,500.00	8,500.00
Satisfaction rate of users of WSS services provided			Percentage	0.00				80.00	80.00

Satisfaction rate of female users of WSS services provided			Number	0.00	0.00	0.00	0.00	80.00	80.00
Component 3 : Water resources management									
Water quality mapping system in use			Yes/No	N	N	N	Y	Y	Y
Number of piezometers, trial boreholes and hydrometric stations installed under the project			Number	0.00	10.00	20.00	35.00	54.00	54.00

Monitoring & Evaluation Plan: PDO Indicators	
Indicator Name	People provided with access to improved water sources
Definition/Description	This indicator measures the cumulative number of people who benefited from improved water supply services that have been constructed through operations supported by the World Bank.
Frequency	Bi-Annual
Data Source	This indicator measures the number of people in rural areas who benefited from “improved water sources” under the Project. Improved water sources include piped household connections (house or yard connections), public standpipes, public kiosks the definition of what is considered an “improved water source” follows the UNICEF-WHO Joint Monitoring Program definition.
Methodology for Data Collection	This indicator will be computed by the PCU as the sum of the number of water service connections installed under the Project, as validated by OFOR, multiplied by 10 people and of the number of stand posts installed under the Project, as validated by OFOR, multiplied by 300 people
Responsibility for Data Collection	PCU / OFOR

Indicator Name	People provided with access to improved sanitation services
Definition/Description	The indicator measures the cumulative number of people who benefited from improved sanitation facilities that have been constructed through operations supported by the World Bank.
Frequency	Bi-Annual
Data Source	This indicator measures the cumulative number of people who benefited from improved sanitation facilities that have been constructed under the Project. “Improved sanitation facilities” include flush/pour-flush into a piped sewer system, septic tank or pit latrine, VIP latrine, pit latrine with slab, composting toilet. The definition of what is considered an “improved sanitation facility” follows the UNICEF-WHO Joint Monitoring Program definition.
Methodology for Data Collection	This indicator will be computed by the PCU as the sum of the number of household latrines installed under the Project, as validated by ONAS and DA and of the number of sewer service connections installed under the Project, as validated by ONAS, multiplied by 10 people.
Responsibility for Data Collection	PCU / ONAS and DA

Indicator Name	Operator monitoring system generating regular reports on performance against key indicators
Definition/Description	Operator monitoring system generating regular reports on performance against key indicators
Frequency	Bi-Annual
Data Source	The indicator will have a Yes value when the performance monitoring system is functional at OFOR
Methodology for Data Collection	Yes: If monitoring system is functional No: If not
Responsibility for Data Collection	PCU

Indicator Name	Water resources development master plans completed and approved
Definition/Description	Water resources development master plans completed and approved / The indicator measures the number of water resources development master plans completed and approved under the Project.
Frequency	Bi-Annual
Data Source	DGPRE will report the total number of water resources development master plans that have been completed and approved to the PCU.
Methodology for Data Collection	The indicator measures the number of water resources development master plans completed and approved under the Project.
Responsibility for Data Collection	PCU

Indicator Name	Number of women provided with access to improved sanitation under the project
Definition/Description	Number of women provided with access to improved sanitation under the project
Frequency	Bi-Annual
Data Source	Number of people provided with access to improved sanitation under the project
Methodology for Data Collection	This sub-indicator will report women beneficiaries
Responsibility for Data Collection	PCU

Monitoring & Evaluation Plan: Intermediate Results Indicators	
Indicator Name	New piped household water connections that are resulting from the project intervention
Definition/Description	New piped household water connections that are resulting from the project intervention
Frequency	Bi-Annual
Data Source	Private operators will report the number of water service connections installed under the Project to OFOR. OFOR will validate the information and transmit the results to the PCU.
Methodology for Data Collection	The indicator measures the number of water service connections installed under the Project that are effectively receiving water.
Responsibility for Data Collection	PCU / OFOR

Indicator Name	Improved community water points constructed or rehabilitated under the project
Definition/Description	Improved community water points constructed or rehabilitated under the project
Frequency	Bi-Annual
Data Source	Supervision engineers will report the number of stand posts installed under the Project to OFOR. OFOR will validate the information with the private operators and transmit the results to the PCU.
Methodology for Data Collection	The indicator measures the number of stand posts installed under the Project that are effectively receiving water.
Responsibility for Data Collection	PCU / OFOR

Indicator Name	Piped water systems equipped with chlorination devices under the project
Definition/Description	Piped water systems equipped with chlorination devices under the project
Frequency	Bi-Annual
Data Source	Supervision engineers will report the number of chlorination devices completed under the Project and taken over by private operators to OFOR. OFOR will validate the information with the private operators and transmit the results to the PCU.
Methodology for Data Collection	The indicator measures the number of chlorination devices installed under the Project that are effectively taken over by private operators.
Responsibility for Data Collection	PCU / OFOR

Indicator Name	Water production facilities rehabilitated under the project
Definition/Description	Water production facilities rehabilitated under the project
Frequency	Bi-Annual
Data Source	Supervision engineers will report the number of piped systems of which the rehabilitation of production facilities has been completed under the Project to OFOR. OFOR will validate the information with the private operators and transmit the results to the PCU.
Methodology for Data Collection	The indicator measures the number of piped systems of which the rehabilitation of production facilities has been completed.
Responsibility for Data Collection	PCU / OFOR

Indicator Name	Water sample tests meeting bacteriological standards
Definition/Description	Water quality tests at consumer water points that meet required standards
Frequency	Bi-Annual
Data Source	Water samples will be collected bi-annually on each piped system included in the four affermage contracts to test the compliance of distributed water with bacteriological standards. Tests results will be transmitted to OFOR for further transmission to the PCU.
Methodology for Data Collection	This indicator measures the percentage of samples taken during the year that meet the bacteriological standards. The baseline has been set to zero, as no chlorination devices are installed on the existing facilities.
Responsibility for Data Collection	PCU / OFOR

Indicator Name	Household latrines constructed under the project
Definition/Description	Household latrines constructed under the project in the Groundnut Basin area
Frequency	Bi-Annual
Data Source	Supervision engineers will report the number of household latrines installed under the Project in the Groundnut Basin area that comply with technical standards and the needs of beneficiaries to ONAS. ONAS will validate the information and transmit the results to the PCU.
Methodology for Data Collection	The indicator measures the number of household latrines installed under the Project in the Groundnut Basin area that effectively comply with technical standards and the needs of beneficiaries.
Responsibility for Data Collection	PCU / ONAS

Indicator Name	Household sewer connections constructed under the project
Definition/Description	Household sewer connections constructed under the project
Frequency	Bi-Annual
Data Source	Supervision engineers will report the number of sewer service connections installed under the Project to ONAS. Sewer connections include service connections to conventional sewerage systems and interceptor tank/connections to condominial sewerage systems. ONAS will validate the information and transmit the results to the PCU.
Methodology for Data Collection	The indicator measures the number of sewer connections installed under the Project that are effectively connected to sewerage networks.
Responsibility for Data Collection	PCU / ONAS

Indicator Name	Additional wastewater treatment capacity installed under the project
Definition/Description	Additional wastewater treatment capacity installed under the project
Frequency	Bi-Annual
Data Source	Supervision engineers will report the number of wastewater treatment plants completed under the Project and taken over by ONAS and their treatment capacity to ONAS. ONAS will validate the information and transmit the results to the PCU.
Methodology for Data Collection	The indicator measures the total treatment capacity of the wastewater treatment plants installed under the Project that are effectively taken over by ONAS.
Responsibility for Data Collection	PCU / ONAS

Indicator Name	Additional sludge treatment capacity installed under the project
Definition/Description	Additional sludge treatment capacity installed under the project
Frequency	Bi-Annual
Data Source	Supervision engineers will report the number of sludge treatment plants completed under the Project and taken over by ONAS and their treatment capacity to ONAS. ONAS will validate the information and transmit the results to the PCU.
Methodology for Data Collection	The indicator measures the total treatment capacity of the sludge treatment plants installed under the Project that are effectively taken over by ONAS.
Responsibility for Data Collection	PCU / ONAS

Indicator Name	On-site sanitation facilities constructed under the sanitation marketing approach
Definition/Description	On-site facilities constructed under the sanitation marketing approach
Frequency	Bi-Annual
Data Source	Business developers will report the number of household latrines installed under the sanitation marketing approach in the Saint Louis and Matam regions to DA. DA will validate the information with supervision engineers and transmit the results to the PCU.
Methodology for Data Collection	The indicator measures the number of household latrines installed under the sanitation marketing approach in the Saint Louis and Matam regions and under the Project.
Responsibility for Data Collection	PCU / DA

Indicator Name	Satisfaction rate of users of WSS services provided
Definition/Description	Satisfaction rating by users of project facilities
Frequency	Annual
Data Source	User surveys will be commissioned by the PCU on an annual basis among the users of water systems and sanitation facilities. Water users will give feedback on the availability of service, the quality of water and their overall satisfaction. Sanitation users will give feedback on their overall satisfaction with their sanitation facilities.
Methodology for Data Collection	Weight factors will be agreed and assigned to each satisfaction item. An overall satisfaction index will be computed by the PCU. The baseline is zero.
Responsibility for Data Collection	PCU

Indicator Name	Satisfaction rate of female users of WSS services provided
Definition/Description	Satisfaction rating of female users of water supply and sanitation services and facilities provided by the project in terms of their responsiveness to their needs and requirements
Frequency	Annual
Data Source	User surveys will be commissioned by the PCU on an annual basis among the users of water systems and sanitation facilities. Water users will give feedback on the availability of service, the quality of water and their overall satisfaction. Sanitation users will give feedback on their overall satisfaction with their sanitation facilities. Weight factors will be agreed and assigned to each satisfaction item. An overall satisfaction index will be computed by the PCU.
Methodology for Data Collection	This sub-indicator will report women answers. The baseline is zero.
Responsibility for Data Collection	PCU

Indicator Name	Water quality mapping system in use
Definition/Description	Water quality mapping system in use
Frequency	Bi-Annual
Data Source	The indicator will have a Yes value when the centralized mapping system is functional at DGPRE
Methodology for Data Collection	The indicator will have a Yes value when the centralized mapping system is functional at DGPRE
Responsibility for Data Collection	PCU / DGPRE

Indicator Name	Number of piezometers, trial boreholes and hydrometric stations installed under the project
Definition/Description	Number of piezometers, trial boreholes and hydrometric stations installed under the project
Frequency	Bi-Annual
Data Source	Supervision engineers will report the total number of piezometers, trial boreholes and hydrometric stations completed and taken over under the Project to DGPRE. DGPRE will validate the information and transmit the results to the PCU.
Methodology for Data Collection	The indicator measures the number of piezometers, trial boreholes and hydrometric stations installed under the Project that are effectively taken over by DGPRE.
Responsibility for Data Collection	PCU / DGPRE

ANNEX 1: DETAILED PROJECT DESCRIPTION

COUNTRY: Senegal
Senegal Rural Water Supply and Sanitation Project

1. This annex reviews how the PDO will be achieved and existing challenges facing rural water and sanitation services, water resources management and sector institutions will be addressed by the proposed project and provides a detailed description of the activities financed under the project.

Situation of Services in Areas Targeted by the Project

2. The following section provides a summary assessment of the current situation of rural water and sanitation services in the areas targeted by the project, together with summary findings of the assessment of water resources management and of the issues faced by the sector's public entities in the implementation of the ongoing reforms, based on discussions held with OFOR, ONAS and MHA departments (DH, DA and DGPRE).

3. **RWS services.** Table 1.1 provides data on access to piped water in the areas targeted by the project and covered by PPP arrangements. The latter consist of the three *affermage* contracts in the Groundnut Basin area and of the NDP branch of the NDP/GL *affermage*.

Table 1.1. Access to Water Services through Piped Systems in the Targeted Areas (2016)

Indicator / Contract	Thiès Diourbel	Kaolack Kaffrine	Fatick	Total Groundnut Basin area	NDP
Status of *affermage* contracts	Signed, not yet effective	Signed, not yet effective	Awarded, pending signature		Ongoing since 2015
Rural population (thousands)	983	1,284	683	2,950	
Access rate					
- all sources of supply	91.3%	92.7%	89.5%	91.5%	
- piped systems	90.9%	86.9%	81.2%	86.9%	
Number of piped water systems	263	294	78	636	1
Population served by piped systems	894	1,116	555	2,565	270
- through household connections	205	213	105	524	129
- through stand posts	689	903	450	2,041	141
Number of household connections	20,521	21,312	10,525	52,358	12,901
Number of stand posts	2,755	3,611	1,799	8,164	564

Source: PEPAM Sector Review and OFOR.

4. Since its inception in July 2015, the NDP/GL *affermage* has faced several operational challenges. The production facilities and the trunk pipelines had been recently constructed and were progressively connected to pre-existing distribution networks, which resulted in a 50 percent increase in the number of service connections. However, the uneven quality of the distribution networks and the increased water pressure led to substantial water losses, particularly in the NDP branch (48 percent in 2015 and 41 percent in 2016) and to saturation of the installed production capacity.

5. The actual condition of the piped systems of the Groundnut Basin area was not thoroughly known at the time of contract bidding, but it was foreseen that they would require rehabilitation. Therefore, it was agreed that, before contract effectiveness, OFOR would carry out a detailed inventory and assessment of the facilities, with the assistance of consultants and jointly with the selected operators, and that it would design rehabilitation programs. The inventories have been completed for Thiès/Diourbel and Kaolack/Kaffrine and will start shortly in Fatick. The assessments point to (a) the absence of disinfection equipment; (b) the obsolete production facilities, particularly the condition of control cabinets and diesel groups; (c) the poor condition of regulation and safety equipment of boreholes and water storage tanks; and (d) inadequate water production metering. A separate inventory of defective distribution meters was also carried out. The impact of the above shortcomings on water losses is quite substantial and although the level of NRW cannot be accurately measured, OFOR estimates that it should be at best similar to what is currently observed in the NDP branch.

6. **Sanitation services.** Table 1.2 provides basic information on the rural areas that are targeted by the project in the Groundnut Basin area. The situation of rural sanitation is globally deficient and inferior to the country average, in relation both to the access to improved sanitation and the prevalence of open defecation.

Table 1.2 Situation of Rural Sanitation in the Targeted Areas (2016)

Region / Indicator	Diourbel	Kaolack	Kaffrine	Fatick	Total Groundnut Basin area	Rural Senegal
Rural population (thousands)	1,375	667	525	656	3,223	8,167
Population having access to improved sanitation	22.1%	32.3%	13.6%	39.0%	26.3%	35.8%
Prevalence of open defecation	57.9%	39.8%	64.4%	48.4%	53.3%	35.5%

Source: DA and Hygiene and Sanitation Survey[10].

7. The survey results show that the absence of improved latrines in the Groundnut Basin area is mainly associated with the socio-economic situation of the households (less than 10 percent of the poor have improved latrines) and with limited water supplies. Households with water service connections are more likely to possess improved latrines and to use them systematically. The focus group discussions held in connection with the survey also point out that the use of subsidized latrines is

[10] Hygiene and Sanitation Survey of Rural Senegal (Swiss Tropical and Public Health Institute and *Institut de Santé et Développement de Dakar*, November 2015). This survey was financed by WSP.

contingent upon the convenience of their location in the housing plot and the level of privacy offered by the latrine superstructure.

8. Small towns in rural areas face specific sanitation challenges. Most of the households possess latrines and water service connections. However, the disposal of fecal sludge and wastewater is largely inadequate and environmentally unsafe. Manual emptying of latrines is the most frequent desludging method and, in the absence of adequate disposal sites, the few operators of vacuum trucks dump fecal sludge near the towns. Wastewater disposal faces similar issues, as a limited number of households have soak away pits of acceptable quality, the proper functioning of which may be prevented by the soil and infiltration conditions. Dumping of wastewater in the immediate street environment is largely prevalent. The Sanitation Master Plans carried out in small towns identify the technical solutions (or a combination of technical solutions) that could provide an adequate response to these challenges, in accordance with local urbanization features, population density and soil conditions. The range of solutions include on-site sanitation, completed by sludge treatment, condominial sewerage and conventional sewerage.

Water Resources Management

9. The implementation of the Senegal IWRM Action Plan is based on four pillars: (i) improving governance through the legislative and regulatory framework; (ii) improving knowledge and monitoring of water resources; (iii) strengthening the water resources planning systems; and (iv) communication and information on water resources issues. The legislative and regulatory framework is well advanced with the preparation of the Water Act, which should be submitted to the National Assembly soon. Priority should now be given to deepening knowledge of the resources of the South and South-West parts of the country and to establishing a systematic mapping of the quality of resources, which faces multiple challenges stemming from the quality of groundwater as well as from potential pollution issues. Priority should also be given to the preparation of master plans for the development of water resources at the level of the five major water basins of the country.

Institutional Challenges

10. Implementation of the recent RWS sub-sector reform is facing several challenges:
    (a) OFOR has developed capacities in planning and implementing RWS investments, but still lacks adequate tools for managing the sub-sector's assets and effectively monitoring the delivery of services by private operators, and the execution of their contractual obligations.
    (b) ONAS has made substantial progress in delegating responsibilities to the private sector for maintaining networks and operating treatment facilities, but will need assistance at start-up to fulfill its new responsibilities in rural sanitation.
    (c) The recently approved rural water strategy emphasizes the need to involve the Senegalese private sector in the development of access to improved sanitation by using a marketing approach as a medium-term alternative to subsidized latrines programs. With the assistance of WSP and consultants, DA has prepared a comprehensive set of rules and procedures for the marketing approach, but these remain to be tested.

Linkage between Project Activities, PDO, and Challenges

11. The objective of the project is to increase access to improved water and sanitation services in selected rural areas and strengthen capacity for water resources management.

12. **Project's approach.** In line with the PDO, the project will focus on (a) developing access to services through programs for constructing water and sewer service connections, household latrines, stand posts and public toilets; (b) addressing the shortcomings created by the current condition of piped water facilities and the unsafe disposal of wastewater and sludge disposal in small towns; (c) improving knowledge and planning of water resources development; and (d) enabling sector institutions to deliver their mandates in the context of ongoing reforms.

13. **Selection of water and sanitation investments.** The selection of project activities for the RWS component is based on (a) the joint assessments of the condition of the water facilities of the Groundnut Basin systems; (b) a review by OFOR and the private operator of the additional water production needs of the NDP branch; and (c) Senegal's strategy for offering the same level of water service in rural and urban areas through the widespread coverage of household service connections.

14. Regarding sanitation, the selection of project activities (a) reflects the Government's commitment, as expressed in the PSE, to closing the access gap between water and sanitation in rural areas by providing on-site facilities on a large scale; and (b) builds on the findings of sanitation master plans in small towns to address their specific sanitation problems through off-site sanitation networks and treatment facilities. These would be integrated into the scope of ONAS activities.

15. **Selection of WRM activities.** The selection of project activities is based on the priority actions identified by DGPRE for improving knowledge of water resources (studies, monitoring tools and water quality mapping) and for setting an adequate planning framework for the development of water resources (master plans).

16. **Selection of activities to support sector reforms**. The selection of project activities is based on (a) the priority actions identified by OFOR to effectively fulfill its basic missions as the assets holding company (*société de patrimoine*) of the RWS sub-sector in the areas of assets management and monitoring of private operators; (b) the human resources needs identified by ONAS to deliver its missions in the rural sanitation sub-sector; and (c) the design by DA of a pilot program to test the sanitation marketing approach.

17. The project will also help provide (a) support to the PCU for managing the project; and (b) support to the implementation agencies through the provision of vehicles, OT and office equipment, training and the construction and rehabilitation of offices.

18. **Project response to challenges**. The project's response to the challenges involved in the delivery of water and sanitation services, water resources management and the implementation of sector reforms is summarized in Table 1.3, which also documents how the impact of project activities will be monitored.

Table 1.3. Project's Response to Challenges

	Issues	Project Response	Monitoring
Rural water supply			
Reliability and continuity of water services	Obsolete equipment of production facilities leading to service interruptions (Groundnut Basin area), insufficient water quantity	Rehabilitation of electromechanical equipment at production facilities (Groundnut Basin area) Increase of production capacity of the NDP branch	*Number of rehabilitated systems*† *Satisfaction rate of users of services*†
	Defective water storage facilities and absence of regulation equipment leading to water losses	Rehabilitation of water storage facilities	NRW‡
	Lack of production meters and substantial proportion of service connections being billed on a lump sum basis (Groundnut Basin area)	Installation of production meters Replacement of defective distribution meters	Progress reports Metering ratio‡ NRW‡
Water quality	Water distributed without being disinfected (all systems of Groundnut Basin area)	Installation of chlorination devices on all systems	*Percentage of water sample tests complying with required standards*†
	Excessive fluorine and salt content in the groundwater of the Groundnut Basin area	Feasibility study of water transfer to affected areas	Progress reports
Access to water service	Excessive cost of connections and lack of stand posts	Social connections and stand posts programs	*Number of social connections*† *Number of stand posts*†
Sanitation			
Access to improved sanitation	Households' dissatisfaction with traditional latrines High rate of open defecation	Program of construction of PFLs (rural areas of the Groundnut Basin)	*Number of household latrines constructed*†
	Population density and soil conditions unsuitable for on-site sanitation solutions in small towns	Construction of off-site sanitation networks	*Number of service connections to sewers constructed*†
Wastewater and sludge disposal	Unsafe disposal of wastewater in small towns	Construction of wastewater treatment plants in four towns	*Additional capacity of wastewater treatment plants*†
	Unsafe disposal of fecal sludge in small towns	Construction of STPs in five towns	*Additional capacity of STPs*†

	Issues	Project Response	Monitoring
		Organization of the sludge management service chain	
Water Resources Management			
Knowledge of water resources	Insufficient knowledge and monitoring of water resources	Construction of piezometers, trial boreholes and hydrometric stations Design and implementation of a water quality mapping system	*Number of piezometers, trial boreholes and hydrometric stations constructed*† *Water quality mapping in use*†
Planning of water resources development	Absence of planning tools at an adequate geographical level for coordinating and validating the water demands of the various sectors using water resources	Master plan studies of water resources development of five water basins	*Number of master plans approved by DGPRE*†
Implementation of reforms			
RWS	OFOR's inability to fulfill its mission of *société de patrimoine* of the sub-sector due to shortcomings in assets management and oversight of private operators	Inventory of RWS assets and establishment of an assets management system Update of OFOR's financial model Design and implementation of procedures and a reporting system for monitoring the performances of private operators	Progress reports *Operator monitoring system generating regular reports on performance against key indicators set up by OFOR*†
Sanitation	ONAS' human resources have to be adapted to its new responsibilities in rural sanitation	Provision of technical assistance	Progress reports
	Need to involve the private sector in the expansion of access to improved sanitation in rural areas	Pilot program using the marketing approach to sanitation in Saint-Louis and Matam departments	*Number of household latrines constructed under the marketing approach*†

Note: † *Project's monitoring indicator* ‡ Performance indicator reported by private operators.

Detailed Project Activities

19. The selection of activities was finalized at appraisal.

Component 1. Rural Water Supply (US$40.88 million equivalent). This component will include the following activities:

- Sub-component 1.1. Upgrading Systems (US$24.36 million)

  (a) Upgrading of the Thiès and Diourbel piped systems through: (i) the renewal of electro-mechanical equipment of 164 production sites; (ii) the provision of 80 water production meters and the replacement of about 5,627 defective water distribution meters; (iii) the upgrading of water storage facilities; and (iv) the supply and installation of chlorination devices on 256 systems.

  (b) Upgrading of the Kaolack and Kaffrine piped systems through: (i) the renewal of electro-mechanical equipment of 180 production sites; the provision of 100 water production meters and the replacement of about 5,675 defective water distribution meters; (iii) the upgrading of water storage facilities; and (iv) the supply and installation of chlorination devices on 284 systems.

  (c) Upgrading of the Fatick piped systems through: (i) the renewal of electro-mechanical equipment of 27 production sites; the provision of 23 water production meters and the replacement of about 1,338 defective water distribution meters; (iii) the upgrading of water storage facilities; and (iv) the supply and installation of chlorination devices on 40 systems.

  (d) Strengthening and upgrading of the NDP piped system through: (i) the drilling and equipment of two boreholes (expected total yield: 300 m^3 per hour); (ii) the provision and laying of about 5 kilometers (km) of transmission pipes (nominal diameter (DN) 500 mm) and 1 km of connecting pipes (DN 300); and (iii) the renewal of distribution networks and water meters.

- Sub-component 1.2. Development of Access to Water (US$14.21 million)

  (a) Development of access to water through household service connections in all targeted areas (Thiès, Diourbel, Kaolack, Kaffrine, Fatick and NDP) through (i) the expansion of tertiary distribution networks (483 km) and (ii) the construction of about 30,526 social connections.

  (b) Development of access to water in sparsely populated areas through (i) the provision and laying of about 500 km of pipes (DN 63/90/110); and (ii) the construction of about 200 stand posts.

- Sub-component 1.3. Works Control and Supervision and Outreach (US$2.31)

  (a) Consulting services for the control and supervision of Parts 1.1 and 1.2

  (b) Assistance to the targeting of beneficiaries through consulting services

Component 2. Sanitation (US$69.13 million equivalent). This component will include the following activities:

- Sub-component 2.1. Rural Sanitation (US$39.33 million)

Development of access to improved sanitation through the construction of: (i) 100,000 PFL household latrines; and (ii) about 100 public toilets.

- Sub-component 2.2. Condominial Sewerage and Wastewater and Sludge Disposal in Gandiaye (US$3.47 million)

  Development of access to improved sanitation and safe disposal of wastewater and sludge through: (i) the construction of about 10 km of small-bore sewers; (ii) the construction and equipment of a wastewater pumping station; (iii) the connection of about 1,400 households with the construction of interceptor tanks and service connections; (iv) the construction of a wastewater treatment plant (WWTP) with a capacity of 800 m^3 per day; (v) the construction of a STP with a capacity of 60 m^3 per day; and (vi) the provision of a vacuum truck.

- Sub-component 2.3. Sewerage and Wastewater and Sludge Disposal in Small Towns (US$18.66 million)

  (a) Development of access to improved sanitation in four towns (Diourbel, Nioro du Rip, Guinguinéo, Koungheul) through: (i) the construction of about 82 km of sewers; (ii) the construction and equipment of five wastewater pumping stations; (iii) the construction of about 3,690 service connections.

  (b) Safe disposal of wastewater and sludge in five towns (Nioro du Rip, Guinguinéo, Koungheul, Malem Hoddar and Birkilane) through: (i) the construction of three WWTP with a global capacity of 4,100 m^3 per day; and (ii) the construction of five STP with a global capacity of 85 m^3 per day.

- Sub-component 2.4. Pilot Sanitation (US$2.70 million)

  (a) Provision of matching grants to business developers for the construction of household latrines.

  (b) Communication campaigns for behavioral changes.

  (c) Construction and equipment of sanitation shops.

- Sub-component 2.5. Works Control and Supervision and Outreach (US$4.97 million)

  (a) Control and supervision of the component's activities, through: (i) the verification of the compliance of rural latrines with technical standards and the households' features; and (ii) supervision of the works in the small towns.

  (b) Outreach, with a specific targeting of women, through: (i) information and awareness campaigns on the rural latrines program and the condominial and service connections programs; (ii) education campaigns on hygiene, sanitation and public toilets; (iii)

communications activities targeting communities, local governments and local administrations.

Component 3. Water Resources Management (US$7.33 million equivalent). This component will include the following activities:

- Sub-component 3.1. Knowledge of Water Resources (US$4.56 million)

  (a) Groundwater and surface water studies in *Sénégal Oriental* and *Casamance*.

  (b) Strengthening the monitoring of water resources through the construction of 26 piezometers, drilling of eight trial boreholes and the construction of 20 hydrometric stations.

  (c) Mapping of the quality of water resources

- Sub-component 3.2 Planning (US$2.77 million)

  Preparation of Water Resources Development Master Plans in five water basins (*Groundnut Basin, Cap Vert, Senegal Valley, Sénégal Oriental* and *Casamance*)

Component 4. Program Coordination, Support and Capacity Building (US$12.66 million equivalent). This component will include the following activities:

- Sub-component 4.1. Project Management (US$6.15 million)

  (a) Support for implementation of the ESMP.

  (b) Support for project monitoring through: (i) surveys and evaluation activities; and (ii) workshops and seminars.

  (c) Incremental staff costs and operating costs of the PCU.

  (d) Project financial audits and satisfaction surveys.

  (e) Communication activities.

- Sub-component 4.2. Institutional Support (US$4.14 million)

  (a) Support to DH through: (i) a feasibility study of water transfers to address issues related to the excessive fluorine and salt contents in the Groundnut Basin's groundwater; and (ii) an update of the RWS master plan of the *Kédougou, Matam and Tambacounda* regions.

  (b) Support to assist ONAS in the fulfillment of its new mandate in rural areas through the provision of technical assistance.

  (c) Support for the fulfillment of OFOR mandate under the RWS reform through: (i) the design and implementation of comprehensive procedures and follow-up system for monitoring the performances of private operators; (ii) an inventory of RWS assets and the design and

implementation of an assets management system at OFOR; (iii) the update of OFOR's financial model; (iv) the recruitment of one social specialist; and (v) the design, construction and supervision of OFOR offices.

(d) Support for DGPRE through: (i) the provision and installation of groundwater and river data loggers; (ii) the provision of laboratory equipment, probes and testing kits; and (iii) communication activities.

- Sub-component 4.3. Capacity Building (US$2.37 million)

(a) Purchase of vehicles for the SIAs and the technical departments of the MHA (OFOR, ONAS, DGPRE, DH and DA).

(b) Purchase of OT equipment and office equipment for the SIAs and technical departments of the MHA.

(c) Training of staff of the SIAs and technical departments of the MHA.

(d) Travel allowances and travel expenditures of the SIAs and technical departments of the MHA for the supervision of project activities.

Appendix

Detailed Costs of Project Activities

Activities	Unit	Quantity	Unit Price (CFAF, Thousands)	Cost (CFAF, millions)	Cost (US$, millions)
Component 1: Rural Water Supply				**21,258.9**	**40.88**
1.1 Upgrading systems				**12,668.9**	**24.36**
Upgrading of Thiès and Diourbel systems				***5,017.6***	***9.65***
Renewal of electromechanical equipment (production facilities)	Number	164	13,000	2,132.0	4.10
Water production meters	Number	80	218	17.5	0.03
Water distribution meters	Number	5,627	31	176.1	0.34
Upgrading of water storage facilities	Lump sum	1	900,000	900.0	1.73
Chlorination devices	Number	256	7,000	1,792.0	3.45
Upgrading of Kaolack and Kaffrine systems				***5,440.1***	***10.46***
Renewal of electromechanical equipment (production facilities)	Number	180	13,000	2,340.0	4.50
Water production meters	Number	100	227	22.7	0.04
Water distribution meters	Number	5,675	33	189.4	0.36
Upgrading of water storage facilities	Lump sum	1	900,000	900.0	1.73
Chlorination devices	Number	284	7,000	1,988.0	3.82
Upgrading of Fatick systems				***1,101.2***	***2.12***
Renewal of electromechanical equipment (production facilities)	Number	27	13,000	351.0	0.68
Water production meters	Number	23	239	5.5	0.01
Water distribution meters	Number	1,338	48	64.7	0.12
Upgrading of water storage facilities	Lump sum	1	400,000	400.0	0.77
Chlorination devices	Number	40	7,000	280.0	0.54
Strengthening and upgrading of NDP system				***1,110.0***	***2.13***
Drilling and equipment of 2 boreholes (150 m^3/hour each)	Number	2	120,000	240.0	0.46
Transmission line (DN500 pipe)	km	5	100,000	500.0	0.96
Connection lines (DN300 pipe)	km	1	74,000	74.0	0.14
Renewal of distribution networks and water meters	Lump sum	1	296,000	296.0	0.57
1.2 Development of access to water				**7,390.0**	**14.21**
Service connections				***4,350.0***	***8.37***
Installation of HH service connections	Number	30,526	95	2,900.0	5.58
Extension of tertiary distribution networks (DN25 pipes)	km	483	3,000	1,450.0	2.79

Stand posts				***3,040.0***	***5.85***
Installation of stand posts	Number	200	200	40.0	0.08
Extension of distribution networks (DN63/90/110 pipes)	km	500	6,000	3,000.0	5.77
1.3 Works control and supervision and outreach				**1,200.0**	**2.31**
Works control and supervision	Lump sum	1	1,160,000	1,160.0	2.23
Assistance to targeting of beneficiaries	Lump sum	1	40,000	40.0	0.08
Component 2: Sanitation				**35,946.6**	**69.13**
2.1 Rural sanitation				**20,450.0**	**39.33**
PFLs (infrastructure)	Number	100,000	200	20,000.0	38.46
Public toilets (7 boxes)	Number	100	4,500	450.0	0.87
2.2 Condominial sewerage and wastewater and sludge disposal in Gandiaye				**1,804.8**	**3.47**
Sewers	ml	40	10,000	395.0	0.76
WW pumping station	Number	1	94,000	94.0	0.18
Interceptor tanks	Number	1,400	325	455.0	0.88
Service connections	Number	1,400	12	16.8	0.03
WW treatment plant	m^3/day	800	330	264.0	0.51
STP	m^3/day	60	9,000	540.0	1.04
Vacuum truck	Number	1	40,000	40.0	0.08
2.3 Sewerage and wastewater and sludge disposal in small towns				**9,701.8**	**18.66**
Sewers, WW pumping stations and service connections in 4 towns (Nioro du Rip, Guinguineo, Koungheul, Diourbel)				***6,476.8***	***12.46***
Site preparation	Lump sum	1	720,000	720.0	1.38
Sewers	Km	82	40,000	3,292.0	6.33
WW pumping stations	Lump sum	1	1,450,000	1,450.0	2.79
HH service connections	Number	3,690	275	1,014.8	1.95
WW and STPs in 5 towns (Nioro du Rip, Guinguineo, Koungheul, Malem Hoddar and Mbirkilane)				***3,225.0***	***6.20***
Construction of 3 WW treatment plants	m^3/day	4,100	600	2,460.0	4.73
Construction of 5 STPs	m^3/day	85	9,000	765.0	1.47
2.4 Pilot rural sanitation				**1,403.6**	**2.70**
Provision of matching grants to business developers for the construction of HH latrines	Number	8,500	142	1,203.6	2.31
Communication campaign for	Lump sum	1	100,000	100.0	0.19

behavioral changes					
Construction and equipment of sanitation shops	Number	10	10,000	100.0	0.19
2.5 Works control and supervision and outreach				**2,586.4**	**4.97**
Control and supervision: rural sanitation and condominial sewerage	Lump sum	1	1,000,000	1,000.0	1.92
Control and supervision: sewerage	Lump sum	1	800,000	800.0	1.54
Control: Pilot program	Lump sum	1	86,400	86.4	0.17
IEC: rural latrines	Lump sum	1	350,000	350.0	0.67
IEC: HH service connections	Lump sum	1	350,000	350.0	0.67
Component 3: Water Resources Management				**3,810.0**	**7.33**
3.1 Knowledge of water resources				**2,370.0**	**4.56**
Groundwater and surface water studies in *Sénégal Oriental* and *Casamance*	Lump sum	1	700,000	700.0	1.35
Construction of piezometers, trial boreholes and hydrometric stations	Lump sum	1	1,220,000	1,220.0	2.35
Water quality mapping	Lump sum	1	450,000	450.0	0.87
3.2 Planning				**1,440.0**	**2.77**
Master plans of Groundnut Basin, Cap Vert and Senegal Valley	Lump sum	1	710,000	710.0	1.37
Master plans of *Sénégal Oriental* and *Casamance*	Lump sum	1	600,000	600.0	1.15
TA to DGPRE for monitoring and consolidation of master plans	Lump sum	1	130,000	130.0	0.25
Component 4: Program Coordination, Institutional Support and Capacity Building				**6,584.6**	**12.66**
4.1 Project management				**3,197.9**	**6.15**
ESIAs and PARs	Lump sum	1	75,000	75.0	0.14
ESMP implementation	Lump sum	1	460,000	460.0	0.88
Surveys and M&E	Lump sum	1	382,887	382.9	0.74
Workshops and seminars	Lump sum	1	180,000	180.0	0.35
Monitoring	Lump sum	1	100,000	100.0	0.19
PCU staff costs	Lump sum	1	1,700,000	1,700.0	3.27
PCU incremental operating costs	Lump sum	1	150,000	150.0	0.29
Audits and satisfaction surveys	Lump sum	1	100,000	100.0	0.19
Communication	Lump sum	1	50,000	50.0	0.10
4.2 Institutional support				**2,155.0**	**4.14**
Support to DH				***785.0***	***1.51***

Study of water transfer	Lump sum	1	585,000	585.0	1.13
Update of RWS master plans of Kédougou, Matam and Tambacounda regions	Lump sum	1	200,000	200.0	0.38
Support to ONAS				***125.0***	***0.24***
TA for project implementation	Lump sum	1	105,000	105.0	0.20
Recruitment of a social specialist	Lump sum	1	20,000	20.0	0.04
Support to OFOR				***845.0***	***1.63***
Monitoring of private operators	Lump sum	1	200,000	200.0	0.38
Assets inventory and management	Lump sum	1	300,000	300.0	0.58
Update of financial model	Lump sum	1	25,000	25.0	0.05
Recruitment of a social specialist	Lump sum	1	20,000	20.0	0.04
Construction of OFOR headquarters	Lump sum	1	300,000	300.0	0.58
Support to DGPRE				***400.0***	***0.77***
Groundwater level loggers	Number	20	3,000	60.0	0.12
River level loggers	Number	20	3,000	60.0	0.12
Laboratory equipment	Lump sum	1	94,500	94.5	0.18
Probes and kits	Lump sum	1	50,000	50.0	0.10
Communication tools	Lump sum	1	30,000	30.0	0.06
TA (juniors)	Number	3	7,500	22.5	0.04
Design study and bidding documents for building rehabilitation	Lump sum	1	15,000	15.0	0.03
Rehabilitation of DGPRE offices and laboratory	Lump sum	1	68,000	68.0	0.13
4.3 Capacity building				**1,231.7**	**2.37**
Vehicles	Lump sum	1	360,000	360.0	0.69
OT and office equipment	Lump sum	1	105,000	105.0	0.20
Training	Lump sum	1	475,000	475.0	0.91
Travel allowances for supervision of activities	Lump sum	1	291,663	291.7	0.56
TOTAL				**67,600**	**130.00**

ANNEX 2: IMPLEMENTATION ARRANGEMENTS

COUNTRY: Senegal
Senegal Rural Water Supply and Sanitation Project

Project Institutional and Implementation Arrangements

1. The institutional implementation arrangements are similar to those used in previous IDA-financed projects in the urban water and sanitation sector, and which have proved to be efficient and have ensured a satisfactory execution of activities.

Project administration mechanisms

2. *Oversight*. A CCS was established by Ministerial Decision n°009672 on May 8, 2018 to oversee implementation of the proposed project. It regroups representatives of MHA, MEFP represented by the Directorate of Cooperation and External Finance (DCFE), DEEC, DGPRE, DH, DA, ONAS and OFOR, the regional development agencies and the association of local elected representatives and the PCU serving as the CCS secretary.

3. *Project Management and Coordination*. The PCU, within MHA, will be responsible for day to day Project coordination and implementation, including: (i) carrying out FM and procurement activities; (ii) preparing and implementing annual work plans and budgets, to be approved by the CCS and the Association; (iii) ensuring compliance with safeguards documents for Project activities; and (iv) monitoring and evaluating project activities and preparing progress reports and M&E reports.

4. *Implementation*. The implementation of the first three components of the project will be supported by three SIAs: OFOR for the rural water component, ONAS for the sanitation component, and DGPRE for the water resources component. The PCU will manage the implementation of the institutional support and project management component in cooperation with OFOR, ONAS and the technical departments of the MHA (DGPRE, DH and DA).

5. In supporting the implementation of their respective components, the SIAs will be responsible for: (i) assisting the PCU with quality control of procurement documents; (ii) the technical management of activities, including the provision of quality control for infrastructural work and for ensuring that appropriate safeguard requirements and standards are maintained; and (iii) review of contractors' payment requests for approval by the PCU.

6. *Implementation of the Pilot Program of the Marketing Approach to Sanitation*. The matching grants mechanisms by which the proceeds of the credit will be made available to the business developers in accordance with the criteria, guidelines and detailed procedures set forth in the PIM and under the Matching Grants Agreements between the PCU and the business developers in accordance with the provisions of Section I.B of Schedule 2 to the Financing Agreement.

7. *PIM.* Arrangements and procedures for the institutional coordination and execution of the project; for the fiduciary aspects, M&E and reporting, safeguards monitoring and mitigation; for the

responsibilities and mandate of the SIAs; for the selection criteria of the business developers; and for the FM, procurement and disbursement procedures of the Matching Grants are all detailed in the PIM. The PIM will be prepared, no later than one month after credit effectiveness, by updating the existing PIM of the PCU to reflect the new features and activities of the project.

Financial Management

Financial Management Assessment

8. A FM assessment of the PCU was carried out in February 2018. The objective of the assessment was to determine whether the PCU has acceptable FM arrangements in place to ensure that the project funds will be used only for the intended purposes, with due attention to considerations of economy and efficiency. The assessment complied with the FM Manual for World Bank-financed investment operations effective March 1, 2010.

9. FM arrangements are acceptable if they are capable of accurately recording all transactions and balances, supporting the preparation of regular and reliable financial statements, safeguarding the project's assets, and are subject to auditing arrangements acceptable to the World Bank. These arrangements should be in place when project implementation starts and be maintained throughout project implementation. The assessment concluded that the FM of the PCU satisfies the World Bank's minimum requirements under the World Bank Policy and Directive for Investment Project Financing effective in 2017, and therefore is adequate to provide, with reasonable assurance, accurate and timely FM information on the status of the project required by the World Bank.

10. The overall fiduciary risk rating is assessed as moderate. However, in order to maintain an adequate internal control environment and the proper segregation of duties, the existing fiduciary procedures of the PIM of the PCU will be updated to reflect the proposed project's activities no later than one month after credit effectiveness. In addition to the external audit of project accounts, the audits of the financial statements of OFOR and ONAS will be transmitted to IDA no later than six months after the end of each fiscal year.

Financial Management Arrangements

11. *Budgeting***.** The budgeting process and monitoring will be clearly defined in the administrative, financial and accounting procedures incorporated in the PIM and the budget will be adopted by the CCS before the beginning of the year. Annual draft budgets will be submitted for the World Bank's no-objection before adoption and implementation. Reports of budget monitoring and recommendations will be prepared by the FM team every quarter and included in the Interim Financial Reports (IFRs).

12. *Accounting.* The current accounting standards in use in Senegal for on-going World Bank-financed projects will be applicable. The Accounting System of the Organization for the Harmonization of Business Law in Africa (SYSCOHADA) is the assigned accounting system in the West Africa Economic and Monetary Union countries. Project accounts will be maintained on an accrual basis, supported with appropriate records and procedures to track commitments and safeguard assets. Annual

financial statements will be prepared by the PCU in accordance with SYSCOHADA. Accounting and control procedures will be documented in the updated PIM.

13. *Internal control.* The internal control system will consist of a CCS to oversee the project activities and adequate fiduciary procedures to describe roles and responsibilities and define control activities. The existing PIM of the PCU is being updated in order to: (i) clearly define roles and responsibilities of all stakeholders and implementing units; (ii) provide a clear description of operations documentation; (iii) provide a clear description of the internal control systems that will be used by the project; (iv) maintain appropriate safeguarding of assets and funds; (v) clarify the roles and responsibilities of all stakeholders particularly for the parastatal institutions ONAS and OFOR; and (vi) provide a clear description of the budget monitoring and reporting process.

14. *Financial Reporting.* The PCU will produce quarterly unaudited IFRs, which will include sources and uses of funds by project expenditures classification and a comparison of budgeted and actual project expenditures (commitment and disbursement) both to date and for the quarter. The IFRs are to be submitted to the World Bank within 45 days after the end of the quarter. The PCU has already agreed with the World Bank on the format of the IFRs to be used. The PCU will produce Annual Financial Statements, and these statements will comply with SYSCOHADA and World Bank requirements. These Financial Statements[11] will comprise of:

- A Statement of Sources and Uses of Funds
- A Statement of Commitments
- Accounting Policies Adopted and Explanatory Notes
- Reconciliation of the Designated Account
- A Management Assertion that project funds have been expended for the intended purposes as specified in the relevant financing agreements.

15. *External Auditing*. The Financing Agreement will require the submission of Audited Financial Statements for the project to IDA within six months after year-end. An external auditor with qualification and experience satisfactory to the World Bank will be appointed to conduct an annual audit of the project's financial statements. The contract for the existing auditor of the PCU will be extended to include the audit of the proposed project. OFOR and ONAS will also transmit to IDA their audited financial statements no later than six months after the end of the fiscal year.

16. The Table 2-1 summarizes the auditing requirements.

[11] It should be noted that the project financial statements should be all inclusive and cover all sources and uses of funds and not only those provided through IDA funding. It should thus reflect all program activities, financing, and expenditures, including funds from other development partners.

Table 2-1: Audit Reports and Due Dates

Audit Report	Due Date
Annual audited financial statements and Management Letter (including reconciliation of the Designated Accounts with appropriate notes and disclosures).	End of June
Annual audited financial statements and management letters of OFOR and ONAS	End of June

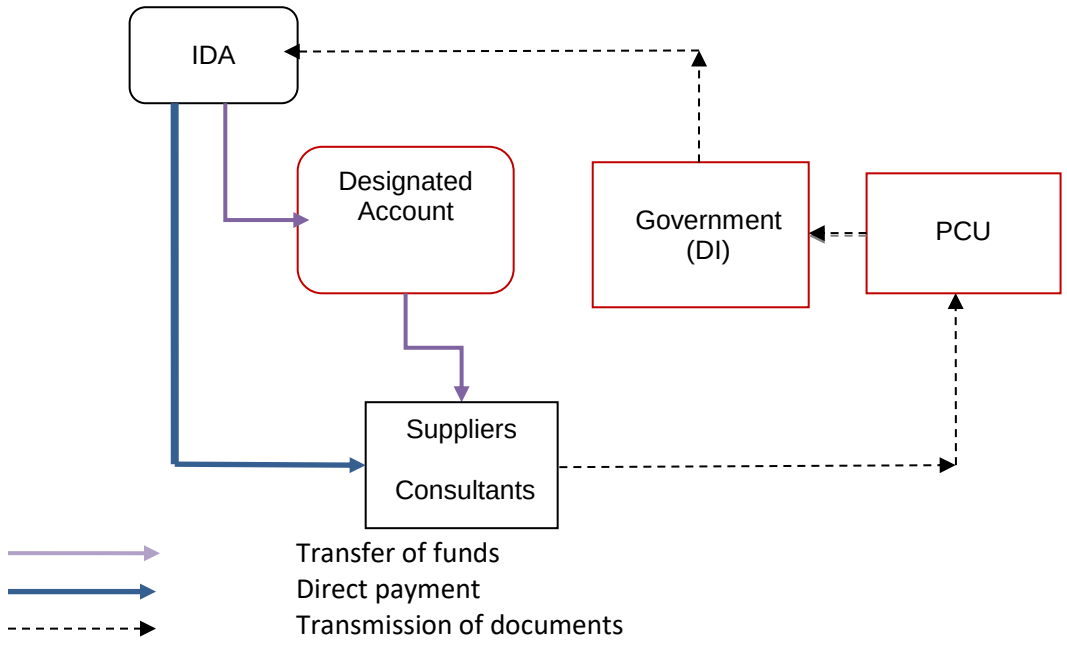
17. *Financial Covenants.* The Recipient shall establish and maintain a FM system that includes records, accounts and preparation of the related financial statements in accordance with accounting standards acceptable to the World Bank. The Financial Statements will be audited in accordance with international auditing standards. The audited Financial Statements for each period shall be furnished to the Association not later than six (6) months after the end of the project fiscal year. The Recipient shall prepare and furnish to the Association not later than 45 days after the end of each calendar quarter, interim un-audited financial reports for the Project, in form and substance satisfactory to the Association. The Recipient shall comply with all the rules and procedures required for withdrawals from the Designated Account of the project.

Disbursements

18. *Disbursement Methods* the following disbursement methods may be used under the project: reimbursement, advance, direct payment and special commitment as specified in the Disbursement Letter and in accordance with the World Bank Disbursement Guidelines for Projects, dated May 1, 2006. Disbursements will be transactions-based while withdrawal applications will be supported with Statements of Expenditures (SOE). A Designated Account (DA) will be opened in a commercial bank acceptable to the Association to facilitate payment for eligible expenditures. The Designated Account will be managed according to the disbursement procedures described in the administrative and financial procedures of the PIM and in compliance with the Disbursement Letter and will be managed by the Directorate of Investment (DI) of MEFP, in coordination with the PCU. The ceiling of the Designated Account will be set to CFAF 4 billion and will cover approximately four months of expenditures. It will be replenished through the submission of monthly withdrawal applications by the PCU through the DI and will include SOEs and documents as may be required.

19. *Funds Flow Arrangements.* Funds flow arrangements for the project are described in the following chart.

Funds Flow Chart



20. *Disbursement Categories.* The allocation of IDA financing across categories of expenditures is outlined in Table 2-2 below.

Table 2-2: Allocation of IDA Financing (Euros)

Category	Amount of the SUF Credit expressed in Euros	Percentage of Expenditures to be Financed (inclusive of taxes)
(1) Goods, works, non-consulting services, and consultants' services, Training and Operating Costs for the Project except Part 2.4	105,400,000	100%
(2) Matching Grants under Part 2.4 of the Project	2,100,000	100%
TOTAL AMOUNT	107,500,000	

21. *Withdrawal Conditions*. No withdrawal shall be made:
    (a) from the Financing Account until the Association has received payment in full of the Front-end Fee; or
    (b) for payments made prior to the Signature Date; or
    (c) under Category 2, unless the Association is satisfied that the Matching Grants comply with the provisions of Section 1.B of Schedule 2 of the Agreement.

Procurement

General

22. Procurement for goods, non-consulting, and consulting services to be financed by the credit will follow the procedures specified in the "World Bank Procurement Regulation of Goods, Works and Non-Consulting Services under "World Bank Procurement Regulations for Borrowers under Investment Project Financing" dated July 1, 2016 revised in November 2017 and the World Bank's Anti-Corruption Guidelines: "Guidelines on Preventing and Combatting Fraud and Corruption," revised in June 2011.

23. The procuring entity as well as bidders, and service providers, i.e. suppliers, contractors and consultants shall observe the highest standard of ethics during the procurement and execution of contracts financed under the project in accordance with paragraph 3.32 and Annex IV of the Procurement Regulations.

24. The Recipient shall prepare and submit to the World Bank a General Procurement Notice (GPN) and the World Bank will arrange for publication of GPN in United Nations Development Business (UNDB) online and on the World Bank's external website. The Recipient may also publish it in at least one national newspaper.

25. The Recipient shall publish the Specific Procurement Notices (SPN) for all goods, works, non-consulting services, and the Requests for Expressions of Interest on their free-access websites, if available, and in at least one newspaper of national circulation in the Recipient's country, and in the official gazette. For open international procurement selection of consultants using an international shortlist, the Recipient shall also publish the SPN in UNDB online and, if possible, in an international newspaper of wide circulation; and the World Bank arranges for the simultaneous publication of the SPN on its external website.

Institutional Arrangements for Procurement

26. The MHA departments have a proven experience in procurement particularly for projects financed by the World Bank. Within the Ministry, there is a Procurement Committee and a Procurement Unit headed by a coordinator/Procurement Specialist with several years of experience in the field. The key role of the Procurement Unit is to ensure the quality of the procurement documents and to support then advice the procurement Committee of the Ministry. The Procurement will be supported in its role by the focal points that are the National Directorates and the PCU.

27. It should be noted that National Directorates staffs have proven experience in procurement particularly for projects financed by donors (IDA, African Development Bank, Islamic Development Bank, African Bank for Economic Development, etc.). However, the heavy workload arising from the considerable number of projects in the Department causes some delays in the procurement implementation of projects.

28. The PCU has a strong experience in carrying procurement activities under World Bank financed projects. The PCU will coordinate the project and will also ensure the quality of all procurement documents prepared by ONAS, OFOR and DGPRE. In that regard, the PCU has a Procurement Specialist who will intervene in cross-sectional and continuous support in relation to the focal points within the implementing agencies under the supervision of the Coordinator. Furthermore, it is envisaged to recruit a second senior procurement Specialist who will reinforce the procurement unit to avoid delays in the implementation of the project. The use of e-ProcureManager developed within the Ministry will help for a better planning and archiving of procurement documents.

29. The day to day procurement work will be performed by OFOR, ONAS and DGPRE. OFOR and ONAS have their own committee and procurement staffs with capacities that are considered satisfactory.

30. *Procurement Management*. OFOR and ONAS have their respective procurement units headed by well experienced Procurement Specialists, assisted by Procurement Assistants (two for each office). The procurement units will take charge of the overall planning and selection processes as provided for in the Financing Agreement. Given the heavy workload and to ensure an excellent quality checking process, the units will define a useful resources/tasks allocation to enable an effective execution of procurement activities. This will help to track and meet timelines as agreed with the donors. Activities under DGPRE will be carried out by the PCU.

31. The Procurement Specialists will work closely with the PCU Procurement Specialist and with the Accredited Procurement Specialist of the World Bank Office. They will benefit from procurement clinics and training organized by the World Bank to be familiar with the new procurement framework.

32. *Filing and record keeping*. The Procurement Procedures Manual will set out the detailed procedures for maintaining and providing readily available access to project procurement records, in compliance with the Loan Agreement. The Implementing Agencies will assign one person responsible for maintaining the records. The logbook of the contracts with unique numbering system shall be maintained.

33. As in the logbook, signed contracts shall be reflected in the commitment control system of the Recipient's accounting system or books of accounts as commitments whose payments should be updated with reference to the payment voucher. This will put into place a complete record system through which the contracts and related payments can be corroborated.

34. The recruitment of civil servants as individual consultants or as part of the team of consulting firms will abide by the provisions of paragraph 3.23 (d) of the Procurement Regulations.

Project Procurement Strategy for Development

35. To determine an adequate and optimal procurement strategy for the best market response, a PPSD has been prepared to consider, among other elements, the market situation, operational context, past experiences and risks. The PPSD and an 18-month procurement plan have been prepared by the Recipient with the support of the World Bank and approved. Moreover, the PCU and the focal points have a demonstrated experience in working with the World Bank financed projects and are familiar

with the World Bank's procurement procedures. The procurement activities for the project will be conducted using the existing institutional arrangements under the PCU. As the MHA has been managing many donors funded projects, it can ensure that suppliers, contractors and consultant who are awarded a contract possess the necessary professional and technical qualification, competence and financial resources to complete the tasks. The project will use the Systematic Tracking of Exchanges in Procurement (STEP).

Scope of procurement

36. The project will finance primarily: (i) the construction and installation of about 100,000 household latrines for a total estimated cost of US$39,326,923, which will be procured through a Request For Proposal with Initial Selection; (ii) the supply and installation of water service connections and DN25 pipes in the project area, and the construction/rehabilitation of water facilities, the expansion of drinking water network in rural areas and the construction of sanitation facilities in schools, health centers and public markets.

37. The other contracts for works consist principally of the rehabilitation of water storage facilities, construction of stand posts and supply and laying of pipes (DN110, 90, 63) for a total estimated cost of US$10,076,923. These activities will be procured through Open International Competitive Bidding and the contract is subject to prior review. The construction of household water service connections will be procured by direct contracting with four private operators that were selected by the Ministry and are already performing in the identified areas.

38. For goods, the renewal of electro-mechanical equipment of about 371 water production sites will be procured through Open International Competitive Bidding and the contract is subject to prior review of the World Bank. National Competitive Bidding will be used for the small contracts for the acquisition of water level recorder equipment and acquisition of technical equipment (probes, measuring kit...), the acquisition of hydrometric equipment, the acquisition of laboratory materials, etc.

39. A consultant/firm will be recruited for the control and supervision of the works for the rural water works based of Quality and Cost Selection through International Shortlisting. The estimated cost of this activity is about US$2,230,769 and the contract is subject to prior review of the World Bank.

40. *Operational Costs*. Operational costs financed by the project would be incremental expenses, including office supplies, vehicles operation and maintenance cost, provision of vehicles and office equipment, communication costs, rental expenses, utilities expenses, consumables, transport and accommodation, per diem, supervision costs, and salaries of locally contracted support staff. Such services' needs will be procured using the procurement procedures specified in the PIM accepted and approved by the World Bank.

41. *Procurement Manual*. Procurement arrangements, including roles and responsibilities, methods and requirements for carrying out procurement shall be elaborated in detail in the Procurement Manual which will be a section of the PIM, to be prepared by the Recipient and agreed with the World Bank not later than within one month from the credit effectiveness.

42. *Procurement methods*. The Recipient will use the procurement methods and market approach in accordance with the Procurement Regulations.

43. The Open National Market Approach is a competitive bidding procedure normally used for public procurement in the country of the Recipient and may be used to procure goods, works, or non-consultant services provided it meets the requirements of paragraphs 5.3 to 5.6 of the Procurement Regulations.

44. The thresholds for particular market approaches and procurement methods are indicated in the below table. The thresholds for the World Bank's prior review requirements are also provided in Table 2-3.

Table 2-3: Thresholds of Particular Market Approaches and Procurement Methods

No	Expenditure Category	Contract (C) Value Threshold* [eq. US$]	Procurement Method	Contracts Subject to Prior Review /[eq. US$]
1	Works	C ≥ 10,000,000	Open Competition International Market Approach	≥ 10,000,000
		200,000 < C < 10,000,000	Open Competition National Market Approach	None
		C ≤ 200,000	RfQ	None
2	Goods, IT and non-consulting services	C ≥ 1,000,000	Open Competition International Market Approach and Direct Contracting	≥ 2,000,000
		100,000 < C < 1,000,000	Open Competition National Market Approach	None
		C ≤ 100,000	RfQ	None
3	National shortlist for selection of consultant firms	C < 300,000	for Consulting Services	None
		C < 500,000	for Engineering and Construction Supervision	None
4	International shortlist for selection of consultant firms	C ≥ 300,000	for Consulting Services	≥ 1,000,000
		C ≥ 500,000	for Engineering and Construction Supervision	≥ 1,000,000
5	Selection of Individual	All Values	All Approaches	≥ 300,000

No	Expenditure Category	Contract (C) Value Threshold* [eq. US$]	Procurement Method	Contracts Subject to Prior Review /[eq. US$]
	consultants			
6	Direct contracting	All Values		As agreed in the Procurement Plan
7	Training, Workshops, Study Tours		Based on approved Annual Work Plan & Budgets (AWPB)	Annual Work Plan & Budgets (AWPB)

45. *Procurement Risk Rating*. The project procurement risk prior to the mitigation measures is **substantial**. The risk can be reduced to a residual rating of moderate upon consideration of successful implementation of the mitigation measures. The risks and mitigation measures are listed in Table 2-4.

Table 2-4: Procurement Risks and Mitigation Measures

Risk Description	Description of Mitigation	Risk Owner
Lengthy process for site identification and preparation of technical files	Use advance contracting for the preparation of the technical studies and the preparation the Bidding documents	Ministry
Mediocre performance of contractors and delay in the contract execution	Select qualified firms for the control and supervision of works and develop a contract management system	Ministry
Delay in payment of contractors/providers/consultants	Raising the ceiling of the Special Account managed by the DCFE/MEFP Define contractual deadlines for the payment process	Ministry/World Bank
Quality of the procurement documents	Systematic review by the PCU and Procurement Unit of OFOR and ONAS	PCU, OFOR, ONAS
Comprehensiveness of Archiving System	Dedicate staff for physical archiving and the use of e-ProcureManager for electronic archiving	PCU, OFOR, ONAS
Role and responsibility of the PCU and focal points including staffs	Develop a Procurement Manual for the project	PCU, OFOR, ONAS
Understanding of the new procurement framework	Training sessions for the procurement staffs	World Bank
Heavy workload	Recruitment a second senior procurement Specialist who will reinforce the procurement unit of the PCU to avoid delays in the implementation of the project	PCU

Procurement Plan

46. The Recipient prepared a detailed 18-month procurement plans which was agreed by the Government and the World Bank on April 30, 2018. The Procurement Plans will be updated in agreement with the World Bank Team annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. The procurement plan is summarized below.

Table 2-5: Procurement Plan Summary

#	Contract Title, description and Category	Estimated Cost US$	World Bank Oversight	Procurement Approach/ Competition	Selection Methods	Evaluation method
Component 1. Water Supply						
Works						
1	Rehabilitation of water storage facilities, construction of standposts and supply and laying of pipes (DN110, 90, 63)	10,076,923	Prior0	International/Open	RFB	Lowest Evaluated
2	Installation of chlorination devices on about 580 systems	7,807,692	Post	National/Open	RFB	Lowest Evaluated
3	Drilling and equipment of two new boreholes with connection pipes to collect ground water	2,134,615	Post	National/Open	RFB	Lowest Evaluated
4	Supply and installation of service connections and supply and installation of PVC D25 pipes with private operators	8,365,385	Prior	Restricted	Direct Selection	Justification
Goods						
5	Renewal of electro-mechanical equipment of about 371 water production sites	9,275,000	Prior	International/Open	RFB	Lowest Evaluated
6	Installation of about 203 water production meters and about 12,640 water distribution meters	915,192	Post	National/Open	RFB	Lowest Evaluated
Consultancy Services						
7	Technical studies of water transfer	1,153,846.	Prior	Open Competition	QCBS	Combined quality and

#	Contract Title, description and Category	Estimated Cost US$	World Bank Oversight	Procurement Approach/ Competition	Selection Methods	Evaluation method
						cost
8	Study to update the master Plan of rural hydraulics in the regions of Kédougou, Matam and Tambacounda	384,615	Post	Open Competition	QCBS	Combined quality and cost
9	Control and Supervision of works	2,230,769	Prior	Open Competition	QCBS	Combined quality and cost
Component 2. Sanitation						
Works						
10	Construction of about 100,000 household latrines and of about 100 public toilets	39,326,923	Prior	International/Open	RFP	Criteria rating
11	Construction of a semi-collective sewerage system in Gandiaye	3,470,769	Post	International/Open	RFB	Lowest Evaluated
12	Development of access to sewerage services in selected small towns	12,455,288	Prior	International/Open	RFB	Lowest Evaluated
13	Construction of wastewater and STPs in selected small towns	6,201,923	Post	National/Open	RFB	Lowest Evaluated
14	Construction of latrines and Sani markets and the promotion of latrines	2,506,930	Post	National/Open	RFB	Lowest Evaluated
Consultancy Services						
15	Control and Supervision of works (rural areas)	1,923,077	Prior	Open Competition	QCBS	Combined quality and cost
16	Control and Supervision of works (small towns)	1,538,462	Prior	Open Competition	QCBS	Combined quality and cost
17	Recruitment of a consultant for the communication campaign for behavior change	185,384	Post	Open Competition	CQBS	Experience and Qualification
18	IEC	673,077	Post	Open Competition	QCBS	Combined quality and

#	Contract Title, description and Category	Estimated Cost US$	World Bank Oversight	Procurement Approach/ Competition	Selection Methods	Evaluation method
						cost
Component 3. Water Resources Management						
Works						
17	Piezometers and trial boreholes	2,269,231	Post	National/Open	RFB	Lowest Evaluated
Goods						
18	Hydrological and hydrogeological Studies	1,346,154	Prior	Open Competition	QCBS	Combined quality and cost
19	Studies of the SDAGE of the Groundnut Basin, Cap Vert and Senegal Valley	1,326,923	Prior	Open Competition	QCBS	Combined quality and cost
20	Studies of SDAGE Casamance and eastern Senegal	1,153,846	Prior	Open Competition	QCBS	Combined quality and cost
21	Technical Assistance for quality control and synthesis of SDAGE	250,000	Post	Open Competition	CQBS	Experience and Qualificatio n
22	Cartographic study of water quality in the Groundnut Basin	865,385	Post	Open Competition	QCBS	Combined quality and cost
Component 4. Institutional Strengthening and Project Management						
Institutional support to the OFOR						
25	Consultant for the support for assets management (inventory and computerized system)	185,385	Post	Open Competition	QCBS	Combined quality and cost
26	Support for monitoring of the private operators	384,615	Post	Open Competition	QCBS	Combined quality and cost
27	Updating the financial model of the OFOR	48,077	Post	Open Competition	CQBS	Experience and Qualificatio n
28	Supervision of the construction work of the	28,846	Post	Limited	IC	3CVs

#	Contract Title, description and Category	Estimated Cost US$	World Bank Oversight	Procurement Approach/ Competition	Selection Methods	Evaluation method
	OFOR headquarters					
29	Construction of OFOR headquarters	576,923	Post	National/Open	NCB	Lowest Evaluated
Institutional support to the DGPRE						
30	Preparation of the Bidding Document for the renovation of the DGPRE building and the laboratory and supervision of the works	15,000	Post	Limited	IC	3CVs
31	Rehabilitation of the DGPRE building and the laboratory	130,769	Post	National/ Limited	RFQ	Lowest Evaluated
32	Hydrometric Station Installation	76,923	Post	National/ Limited	RFQ	Lowest Evaluated
33	Financial Audit	40,000	Post	Open Competition	QCBS	Combined quality and cost
34	Vehicles	576,923	Post	National/Open	RFB	Lowest Evaluated
35	Office and IT equipment	153,846	Post	National/Open	RFB	Lowest Evaluated

Frequency of procurement supervision

47. In addition to the prior review supervision to be carried out from World Bank offices, the capacity assessment of the implementing agency has recommended (i) supervision missions every six months to visit the field; and (ii) at least one annual post procurement review.

48. *Procurement and technical audit*. A procurement and technical audit will be carried out at least every two years during project implementation and a report will be prepared on the procurement process, contract management, fiduciary compliance, and so on.

Environmental and Social (including safeguards)

49. The GoS prepared and disclosed the required safeguard documentation on time. These instruments provide specific mitigation measures along with their comprehensive implementation mechanisms. The main responsibilities are distributed as follows:
    - DEEC is the national institution, along with its decentralized units, in charge of enforcement of the environmental assessment procedure. It has the primary mandate for ensuring that the PCU complies with the safeguard issues throughout the preparation and the construction phases.

Furthermore, a memorandum has been agreed upon with the PCU for collaborative supervision of the contractors on the ground during the civil works. Though DEEC will report to the PCU in the framework of this memorandum, the DEEC will receive all the final safeguards implementation supervision and audit reports.

- The PCU will be responsible for implementing the safeguard instruments and measures, on behalf of the Government. To this end, the PCU will collaborate with: (i) the DEEC for follow up on execution of mitigation measures by the enterprises; (ii) the institution in charge of the monitoring of water and air quality in the project influence zone; and (iii) the national entity in charge of heritage conservation for execution of the chance find procedure, should a case arise. ESMPs will explicitly require monitoring for GBV. Any RAPs that are needed will ensure that women benefit appropriately from compensation. Issues that could be looked at in preparing any RAPs include, among others, the different needs, treatment and compensation for women and men who are displaced and/or resettled (for example, in regard to livelihood sources and social systems). A GRM will also be part of any RAP, which will enable men and women to lodge concerns or complaints related to the compensation and resettlement process. Responsibility for preventing instances of GBV will be specified in ESMPs and included in all construction contracts. The PCU will ensure regular reporting as well as mid-term and final audits of the environment and social measures and recommendations. These reports will be shared with the ministry in charge of environment in compliance with national rules.
- The Enterprises (Contractors) will be responsible for executing a large part of the environmental and social measures during the construction phase; this has been integrated in the bidding documents. To this end, enterprises will prepare their own CESMP, excerpted from the global ESMPs and approved through the ESIA reports. The CESMP will integrate Social, Health, and Safety Plan (SHSP). The draft CESMPs will be cleared by the PCU in collaboration with DEEC prior to commencement of the civil works, and the approved version will be integrated into the Enterprises' detailed work plan. To carry out proper implementation of its environmental and social compliance obligations, any contractor working for the project will recruit environmental and social safeguard specialists, and a health and safety specialist who will work closely with the principal engineer of the team. The implementation reports must detail progress in the execution of the CESMP and the SHSP, and be shared with DEEC and the national entity in charge of heritage conservation.
- The Works Supervisor (Firm or Engineer): The Supervising Engineer will oversee the technical control tasks, and will carry out the day-to-day oversight of CESMP compliance by the contractor. Contracts for supervising engineers will also include responsibility for monitoring and reporting any instances of GBV. An environmental safeguard specialist will be recruited as part of the team to help ensure compliance. A separate CESMP survey report will be periodically provided to the PCU.
- Other key stakeholders: Their nature, role and responsibilities (both general and specific to the project), and specific tasks to execute; collaboration with professional groups, local authorities, specialists, etc. Reports will be sent to the PCU, DEEC, and the World Bank etc. for records, compliance and dissemination purposes.

Follow up and reporting of the mitigation measures

50. The environmental and social mitigation measures will be executed, monitored and reported in: (i) a specific Safeguard Monitoring Report; and (ii) the Environmental and Social Safeguards section of the

overall project periodic report. The responsibility for follow up is with the PCU, in collaboration with DEEC. Following are the overall implementation indicators to be monitored:

- environmental baseline (air, water, noise) study completed;
- number of mitigation measures executed on time;
- number of safeguard implementation reports;
- completion of the RAPs execution before the commencement of civil works (percentage);
- number of complaints received/resolved after compensation/relocation;
- health and safety aspects;
- gender, vulnerability and GBV;
- Incident and accident report;
- follow-up of recruitments; and
- existence of safeguard specialists in the team of enterprises and supervising engineers (number).

51. Summary of the critical safeguard implementation measures:

Table 2-6: Safeguard Implementation Measures

No.	Actions	Responsible
1	Inclusion of appropriate environmental and social mitigation activities and measures in the bidding documents and the contracts of the enterprises and civil works supervisors	PCU
2	Strengthening the managing and technical capacity of the PCU's safeguard unit	PCU
4	Existence of sound protocol (staff, equipment and baseline studies) for the follow through on the residual impacts of the waste water and STPs in the small towns	ONAS
5	Relocation/compensation of all the affected populations as approved in the RAPs	PCU
6	Finalization of the baseline/reference study on water resources quality parameters in the Groundnut Basin	DGPRE
8	Approval of the CESMPs, SHSPs and their integration in the contractors' work plan	PCU (DEEC)
10	Reporting periodically to the ministry in charge of environment to comply with the national rules	PCU

Monitoring and Evaluation

52. Project outcome indicators will be calculated using intermediate results and African harmonized ratios in the water and sanitation sector. The contractual framework of the water and sanitation sector, and particularly the performance contracts of OFOR and ONAS provides an adequate gathering of key project outcome indicators, for example access data. Information on the population that will be benefitting from improved services will be collected by private operators. Progress reports produced by the consultants in charge of control and supervision of the water and sanitation works will provide an adequate reporting of indicators of the project's intermediate results.

The PCU will compile the data, produce progress and monitoring reports, and initiate specific evaluation studies by independent consultants as needed.

ANNEX 3: IMPLEMENTATION SUPPORT PLAN

COUNTRY: Senegal
Senegal Rural Water Supply and Sanitation Project

Strategy and Approach for Implementation Support

1. The strategy for implementation support has been developed based on the nature of the project and its risk profile. Special attention will be given to addressing risks linked to the reform of the water and sanitation sector and its financial viability. This will include: (i) assessing progress in designing the sector reform; (ii) reviewing the results of the periodic updates of the sector's financial models; and (iii) helping to bring consensus on measures designed to maintain the financial equilibrium of the sector.

Implementation Support Plan and Resource Requirements

2. *Financial Management*. Based on the outcome of the FM risk assessment, the following implementation support plan is proposed. The objective is to ensure the project maintains a satisfactory FM system throughout the project's life.

FM Activity	Frequency
Desk reviews	
IFRs review	Quarterly
Audit report review of the program	Annually
Review of other relevant information such as interim internal control systems reports.	Continuous as they become available
On site visits	
Review of overall operation of the FM system	Annual (Implementation Support Mission)
Monitoring of actions taken on issues highlighted in audit reports, auditors' management letters, internal audit and other reports	As needed
Transaction reviews (if needed)	As needed
Capacity building support	
FM training sessions	During implementation and as needed.

3. The focus of implementation support during the project includes:

Time	Focus	Skills Needed	Resource Estimate	Partner Role
First twelve months	Technical and procurement review of the bidding documents	Water and sanitation specialists	7 SWs	N / A
	Procurement training	Procurement specialist(s)	3 SWs	
	FM supervision and training	FM specialist	4 SWs	
	Social impact and land acquisition	Social specialist	2 SWs	
	Environmental supervision and training	Environmental specialist(s)	4 SWs	
	Financial and institutional aspects	Financial analyst/Private sector specialist	2 SWs	
	Team leadership	Task Team Leader	8 SWs	
12-48 months	Project construction	Water and sanitation specialists Procurement specialist(s)	10 SWs 10 SWs	
	Environment and social monitoring & reporting	Environmental specialist(s) Social specialist	8 SWs 8 SWs	N / A
	FM disbursement and reporting	FM specialist	8 SWs	
	Financial and institutional aspects	Financial analyst/Private sector specialist	12 SWs	
	Team leadership	Task Team Leader	22 SWs	
Other				

Note: SW = staff week.

4. The staff skills mix required is summarized below.

Skills Mix Required			
Skills Needed	**Number of Staff Weeks**	**Number of Trips**	**Comments**
Water and Sanitation specialists	17	6	Regional and country office based
Procurement	13	-	Country office based
Social specialist	10	-	Country office based
Environment specialist	12	-	Country office based
FM specialist	12	-	Country office based
Financial analyst/Private sector specialist	14	4	TBD
Task team leader	30	8	Country office based

ANNEX 4: ECONOMIC AND FINANCIAL ANALYSIS

COUNTRY: Senegal
Senegal Rural Water Supply and Sanitation Project

1. The Economic Analysis section of this annex aims to assess the economic impact of the components of the proposed project through a CBA of the water activities and a CE analysis of the sanitation activities (both analyses cover 82 percent of total project costs). The results of the GHG analysis have been included in this section. The Financial Analysis section aims to assess the financial impact of the project's activities on the RWS sub-sector and on OFOR and ONAS.

A. Economic Analysis

Methodology and Scope

2. *Rural Water Supply*. The economic analysis consists of a CBA of the water supply activities of the proposed project. As explained in the project description, these activities help: (i) upgrade and rehabilitate the existing rural piped water systems that have been delegated to private operators under affermage contracts in the regions of Diourbel, Fatick, Kaffrine, Kaolack and Thiès, as well as the NDP branch of the NDP/GL affermage; and (ii) expand access to water services through the installation of households' water service connections and stand posts. The analysis considers an investment program consisting of the water supply component, an allocated portion of the institutional strengthening and project management component, renewal costs, and the incremental (with/without project) costs, as well as the benefits associated with these investments. All calculations are carried out over a 30-year period, using constant 2018 prices and excluding taxes and financing costs.

3. *Sanitation*. Sanitation benefits accruing to targeted households and their associated externalities are difficult to quantify in view of (a) the absence of detailed information at an adequate geographical level and (b) their linkage with the impact of parallel health improvement and other development activities, which prevents the establishment of a counterfactual. Consequently, a CE analysis was carried out, which is based on the comparison of the unit costs of sanitation options fully achieving the objective of safe disposal of excreta, wastewater and sludge at household and community levels.

4. *GHG Analysis*. The GHG analysis found that the RWS activities of the project lead to a reduction of GHG emissions, while the sanitation activities are net emissive. Consequently, the water-related CBA will assess the additional benefits stemming from the reduction of GHG emissions valued with the SPC and the sanitation-related CE will assess whether the Project's technical solutions remain the least-cost solution when taking into account the cost of the net GHG emissions.

Rural Water Supply

5. *Investment Costs*. The cost estimates are drawn from: (i) preliminary design studies of the systems upgrading; (ii) unit costs of distribution networks observed in recent projects; and (iii) unit prices of

water service connections listed in the *affermage* contracts. Investment costs consist of: (i) the direct costs of activities of Component 1, including supervision costs; (ii) the investment costs associated with the further installation of new connections on the stand posts' networks (see Table 4-1); and (iii) the cost of Component 4 activities (project management and capacity building activities) that may be partially allocated to RWS.

6. Detailed investment costs are given below.

Table 4-1: Investment Costs for Economic Analysis (CFAF Million)

Activities	Direct Cost	Total Cost
Systems Upgrading:	12,669	13,470
Development of Access†	8,815	9,822
Supervision	1,200	
Project Management	1,532	
Total	**24,216**	**24,216**

† including the costs associated with further new connections (CFAF 1,425 million).
Source: Design studies, OFOR.

7. *Incremental Costs*. The variable costs of water production (energy and chlorination costs per m^3 produced) and water distribution (commercial costs per connection) of the systems are drawn from the business plans of the operators of the NDP/GL and Thiès/Diourbel systems; maintenance costs are estimated based on similar projects, as follows:

Table 4-2: Operating Costs

Item	NDP	Other systems
Energy (CFAF/m^3 produced)	49.6	80.5
Chlorination (CFAF/m^3 produced)	3.6	4.6
Commercial costs	CFAF 2,000 per connection per year	
Maintenance costs	0.5% of investment costs per year	

Source: Business Plans and World Bank estimates.

8. *Incremental Benefits*. The incremental benefits generated by the project activities are listed in Table 4-3.

Table 4-3: Project Economic Benefits

Activities	*Incremental Benefits*
Systems Upgrading	
Rehabilitation of production facilities	- Reduced maintenance costs of production facilities - Improved regulation of water production and reduction of technical water losses
Rehabilitation of water storage facilities	- Improved regulation of water storage and reduction of technical water losses

Activities	*Incremental Benefits*
Installation of chlorination devices	- Cost savings for households no longer treating water for disinfection
Installation of production meters and replacement of defective distribution meters	- Reduction of NRW
Development of NDP groundwater resources	- Increase of water consumption and increased water revenues from existing users.
Development of Access	
Construction of service connections and tertiary distribution networks	- Incremental water revenues from new connections - Consumer surplus accruing to beneficiaries
Construction of stand posts and primary and secondary distribution networks	- Incremental water revenues from new stand posts - Further new connections on distribution networks generating incremental revenues - Consumer surplus accruing to beneficiaries

9. *Incremental Revenues.* The incremental consumption, water prices and revenues are estimated based on: (i) results of household surveys; and (ii) water rates for domestic customers and stand post vendors from the recently approved tariff schedules. The assumptions for estimating incremental revenues accruing to the water utilities are summarized in Table 4-4.

Table 4-4: Consumption and Water Rates

Location	No. of people served		Consumption (lpcd)		Rate (CFAF/m^3)	
	HH connection	Stand post	HH connection	Stand post	HH connection	Stand post
NDP	10	300	35	15	275	300
Other systems	10	300	35	15	250	270

Source: Household surveys and OFOR.

10. *Consumer Surplus.* Table 4-5 shows the variation of daily consumption and unit costs paid by a household shifting from stand posts to a household water connection and from other sources to stand posts. The cost of water at stand posts is based on the actual prices per bucket paid by users (from household surveys) and the cost of other sources on the opportunity costs of fetching water determined in similar projects. The consumer surplus is equal to the increase of water consumption multiplied by the difference of the water price paid before and after the project and by the price elasticity (0.5).

Table 4-5: Consumption and Water Prices with and without Project

Current/ Future source of supply	Without Project		With Project	
	Consumption (lpcd)	Cost (CFAF/m^3)	Consumption (lpcd)	Cost (CFAF/m^3)
Stand posts/ HH connection	12	516	35	250-275
Other sources/stand posts	7	750	15	516

Source: Household surveys and World Bank estimates.

11. *Cost Savings*. The upgrading of water production facilities is assumed to generate 30 percent savings in maintenance and renewal costs. The improvement of system regulation (production and storage), combined with the rehabilitation of metering is assumed to bring down NRW to the level expected at start-up of operations by the private operators. It is also estimated from household surveys that about 12 percent of households use hypochlorite to disinfect their water at a cost of about US$2 per month.

12. *EIRR and NPV.* The EIRR is estimated at 8.2 percent. The NPV of the project's benefits and costs is estimated at US$9.5 million, using a discount rate of 6 percent. The EIRR and NPV associated to the sub-components are as follows:

Table 4-6: Results by Sub-component

Sub-component	EIRR	NPV@6% (US$ M)
Overall project	8.2%	9.46
Systems upgrading	8.2%	5.84
Development of access	8.2%	3.62

13. *Sensitivity Analysis.* A range of scenarios has been developed to test the sensitivity of the EIRR to the main elements of the economic cash-flows. The variables tested were: (i) investment costs; (ii) operating costs; and (iii) water demand. The outcome of the scenarios is given in Table 4-7, which also provides the switching values of the variables. The project is markedly sensitive to the reduction of water demand, which exhibits the lowest switching value. This primarily affects the sub-component devoted to the development of access. The very strong demand of rural households for service connections should, however, mitigate this risk.

Table 4-7: Results of the Sensitivity Analysis

Scenario	EIRR	NPV@6% (US$ M)	Switching value
Base scenario	8.2%	9.46	
Investment cost increase 20%	6.4%	2.04	25.5%
O&M costs increase 20%	7.7%	7.20	83.8%
Overall demand decrease 20%	6.1%	0.43	21.0%
Combined 10%/10%/10%	6.0%	0.20	

Sanitation

14. *Cost-Effectiveness Approach*. CE relies on comparing the unit costs of sanitation options that fully achieve the objective of safe disposal of excreta, wastewater and sludge at the household and community levels. Therefore, the analysis proceeds with the following steps:
    (a) First, harmonizing the services delivered by the various options proposed by the project, by adjusting the investments to be considered for each option. For on-site sanitation, the cost of household soak away pits and of the final disposal of sludge through an STP must be added to the cost of household latrines. For condominial sewerage, all of the investment costs included in the

project activity must be considered, since the effluent from the interceptor tank flows through the sewers to the WWTP while the sludge generated in the interceptor tank also needs to be periodically emptied and hauled to the STP. For conventional sewerage, which does not generate any sludge, the investment costs consist of the household connections, sewers and pumping station and the WWTP and do not include the STP.

(b) Then, comparing unit costs per capita, which are the sum of (a) the annualized investment costs based on the lifespan of the various items with a 6 percent discount and (b) the annual O&M costs of the option (O&M of the off-site systems and, if necessary, the cost of emptying and hauling sludge to the STP and the O&M costs of the STP).

15. The cost estimates are drawn from (a) the investment costs provided in the sanitation master plans of the small towns and from recent contract awards of the same nature; (b) estimates of annual operating expenditures of sewerage networks, WWTPs and STPs in the sanitation master plans; and (c) the results of the household surveys of rural sanitation concerning the maintenance costs of household latrines.

16. *Results of the costs comparison*. Table 4-8 provides the costs per capita of the various options.

Table 4-8: Average costs of the various sanitation options (US$ per capita)

Sanitation option	Investment cost	Annualized cost @6%	Annual O&M cost	Total annual cost
On-site sanitation (Rural areas, Malem Hoddar and Birkilane)				
On-site facilities (latrine infrastructure and soak away pit)				
STP	48.1	5.1	1.3	6.4
Total cost	34.6	3.0	4.4	7.4
	82.7	**8.1**	**5.6**	**13.7**
Creation of condominial sewerage system (Gandiaye)				
Interceptor tank and sewer connection	49.9	5.1		
Sewers and pumping stations	51.7	4.7		
Wastewater treatment plant	27.9	2.4		
STP	81.2	7.1		
Total cost	**210.6**	**19.3**	**3.4**	**22.7**
Creation of conventional sewerage systems (Guinguinéo, Koungheul and Nioro du Rip)				
Household sewerage connection	40.7	4.2		
Sewers and pumping stations	149.0	13.6		
Wastewater treatment plant	89.3	7.8		
Total cost	**278.9**	**25.6**	**5.2**	**30.8**
Extension of conventional sewerage system (Diourbel)				
Household sewerage connection	44.3	4.6		
Sewers and pumping stations	72.9	7.00		
Total cost	**117.2**	**11.6**	**2.7**	**14.3**
Historic references				
Creation of condominial sewerage systems (Dakar peri-urban)				
Creation of conventional sewerage system (6 small cities)	244.2	21.9	5.2	27.1
Extension of conventional sewerage systems (various cities)	167.5	15.2	2.7	17.9

Source: Project design studies and ONAS.

17. The above results show that the network extension program in the center that is already equipped with a comprehensive sewerage system (Diourbel) has an annual per capita cost (US$14.3) close to on-site sanitation (US$13.7). The creation of an entirely new condominial sewerage system in Gandiaye will entail costs 66 percent higher than on-site sanitation, and the creation of a conventional sewerage system will be even more costly (124 percent higher than on-site sanitation). These values are commensurate with the costs observed in similar IDA-funded interventions (LTWSP and UWSP).

18. In addition, CE alone cannot dictate the sanitation option, as:
    (a) Local factors, of a technical nature (soil permeability, high water table) or factors that are linked to the urbanization features (lay out of housing plots and streets, population density) may forbid the adoption of on-site sanitation.
    (b) Therefore, an efficient planning and development of sanitation services should be based on the concurrent adoption of multiple specific options suitable to various areas of the town. The project design is fully consistent with this principle, since the investments programmed in all small towns include STPs to meet the needs of the areas where on-site sanitation is the best technical and economic option, as well as the needs of the neighboring rural population.

19. *Potential Cost Savings for Off-site Beneficiaries*. The project will generate savings in emptying costs for the beneficiaries of sewer connections. Table 4-9 compares the annual cost of adequate disposal of wastewater and sludge for an urban compound (consisting of on average 13 people) in the with/without project situation, considering the fact that once a sewerage system is installed, an ONAS surcharge is added to the water bills.

Table 4-9: Annual Cost Savings of Sewered Households

Costs and Savings	Unit	Without Project	With Project	
			Conventional Sewerage	Condominial Sewerage
Emptying costs				
Frequency	No. per year	1	0	0.33
Unit cost	CFAF	25,700	0	25,700
Annual cost per compound	CFAF	25,700	0	8,481
Sanitation surcharge				
Annual water consumption	m^3	128	128	128
Surcharge per m^3	CFAF	0	34	34
Annual surcharge	CFAF	0	4,312	4,312
Annual savings:				
Per compound	CFAF	0	21,388	12,907
Per compound	US$	0	41	25
Per capita	US$	0	8	2

Source: Hygiene and Sanitation Survey and ONAS.

GHG Emissions

20. *Rural Water Supply*. Carbon dioxide (CO_2) emissions are estimated based on the energy consumption of rural water facilities. The evaluation compares the anticipated baseline without project emissions, when there are no project interventions, and with project scenario emissions. Baseline emissions are estimated from the energy consumption of existing facilities, while the "with" project scenario accounts for changes in emission levels of (a) additional energy consumption generated by the additional water consumption of new service connections and standposts and the additional water production of the NDP system; and (b) energy consumption of the existing facilities after their rehabilitation, which leads to a reduction of NRW. Annual emission variations are priced with the low and high SPC (US$80 and US$40 per ton, respectively) increased by 2.26 percent per year.

21. While increasing access to the water supply networks will see net emissions rise by 6,298 tCO_2-eq, the project's NRW reduction activities will reduce net emissions by -12,070 tCO_2-eq, meaning that, overall, the project's water supply activities result in net emissions of -5,772 tCO_2-eq due to the energy efficiency gains from NRW reduction. The inclusion of the CO_2 emission cost savings in the economic evaluation will slightly affect the results of the economic evaluation, as shown in Table 4-10.

Table 4-10: Impact of GHG Emissions on the Results of the CBA

Results	EIRR (%)	NPV (US$, millions)
Excluding GHG emissions	8.19	9.46
Including GHG emissions with low SPC	8.22	9.58
Including GHG emissions with high SPC	8.24	9.71

22. *Sanitation*. GHG emissions of sanitation facilities are of diverse nature (CO_2 from energy consumption, methane and nitrous oxide from wastewater and sludge treatment and human waste removal). The GHG analysis compared the emission levels in the "with "and "without "project scenario.

23. Overall, sanitation services will experience net emissions of 44,060 tCO_2-eq. When valued with the high SPC, the net emissions will have a NPV of about US$1.89 million. This amount has to be compared to the cost of alternative treatment solutions that will eliminate the net emissions (activated sludge process combined with nitrogen and methane removal)). Typically, these solutions entail investment costs that are at least twice the cost of the lagooning process adopted under the project. As the cost of the project-built WWTPs is US$2.72 million, this means that the project's technical solutions will remain the least-cost solution when taking into account the GHG emissions.

B. Financial Analysis

Financial Impact of the Project

24. *Rural Water Supply Sub-Sector Perspective*. The financial impact of project activities is assessed by the FIRR derived from the CBA. Financial calculations consider the financial revenues and costs in the

with/without project scenarios, including taxes and excluding non-cash generating benefits (consumer surplus and cost savings accruing to households). The FIRR is estimated at 4.3 percent. This reflects the rate of return computed from the perspective of the combined partners of the sector (Government, OFOR and operators).

Financial impact on OFOR

25. OFOR was effectively established in 2015 and began implementing RWS projects in 2016 with the financial support of the National Budget and several external support agencies. In the medium-term, OFOR is expected to finance its operations through a portion of the water bills, the so-called P_p, that is, the difference between the contractual remuneration of the private operators and the tariffs paid by water customers. For the time being, the NDP/GL system is the only system generating revenues.

26. The OFOR financial statements for 2015 and 2016 are available. Table 4-11 summarizes the income statements. The fees received from the NDP/GL operator represent about 5 percent of OFOR's cash operating expenditures.

Table 4-11: OFOR Income Statements 2015-2016 (CFAF Millions)

Year	2015	2016
Fees received from operators	23	71
Operating subsidies	500	875
Operating revenues	533	1,123
Cash operating expenditures	564	1,320
Depreciation and allowances	6	154
Operating expenditures	570	1,474
Operating income	-38	-352
Net income	-38	-351
Working ratio (%)	107.2%	136.3%
Coverage of cash operating expenditures by fees (%)	4.0%	5.4%

27. The proposed project will help facilitate the execution of the affermage contracts by upgrading the water facilities. The installation of new service connections and standposts, and the additional water production capacity for the NDP will help increase water revenues and OFOR's remuneration.

28. As importantly, the Component 4 activities that are related to OFOR' s institutional strengthening will enable OFOR to obtain a clear vision of the financial viability of the RWS sub-sector through (a) the inventory of the RWS assets and the establishment of an assets management system and (b) the updating of its financial model.

Financial Impact on ONAS

29. The annual operating expenditures of the sanitation facilities to be constructed under the project in small towns are estimated at CFAF 155 million. This amount represents about 1.3 percent of the operating expenditures of ONAS in 2016.

30. The creation of new sewerage networks in the three towns that belong to the perimeter of the SDE affermage (Nioro du Rip, Guinguinéo and Koungheul) will trigger the additional billing of ONAS fees to the water bills of all water customers, generating annual incremental revenues of about CFAF 25 million. The expansion of the network in Diourbel, which is already equipped with a sewer system will not generate additional ONAS fees from the water customers. The operation of the STPs will generate revenues from sludge haulers of about CFAF 5 million per year.

31. Even though the annual operating cash-flow of the project-financed sewerage operations is negative, it will have a marginal impact on the financial position of ONAS. However, this will likely prevent the adoption of an *affermage* contract for a PSP scheme, and a services contract would be a more realistic option.

ANNEX 5: MAP OF THE PROJECT AREA

COUNTRY: Senegal
Senegal Rural Water Supply and Sanitation Project